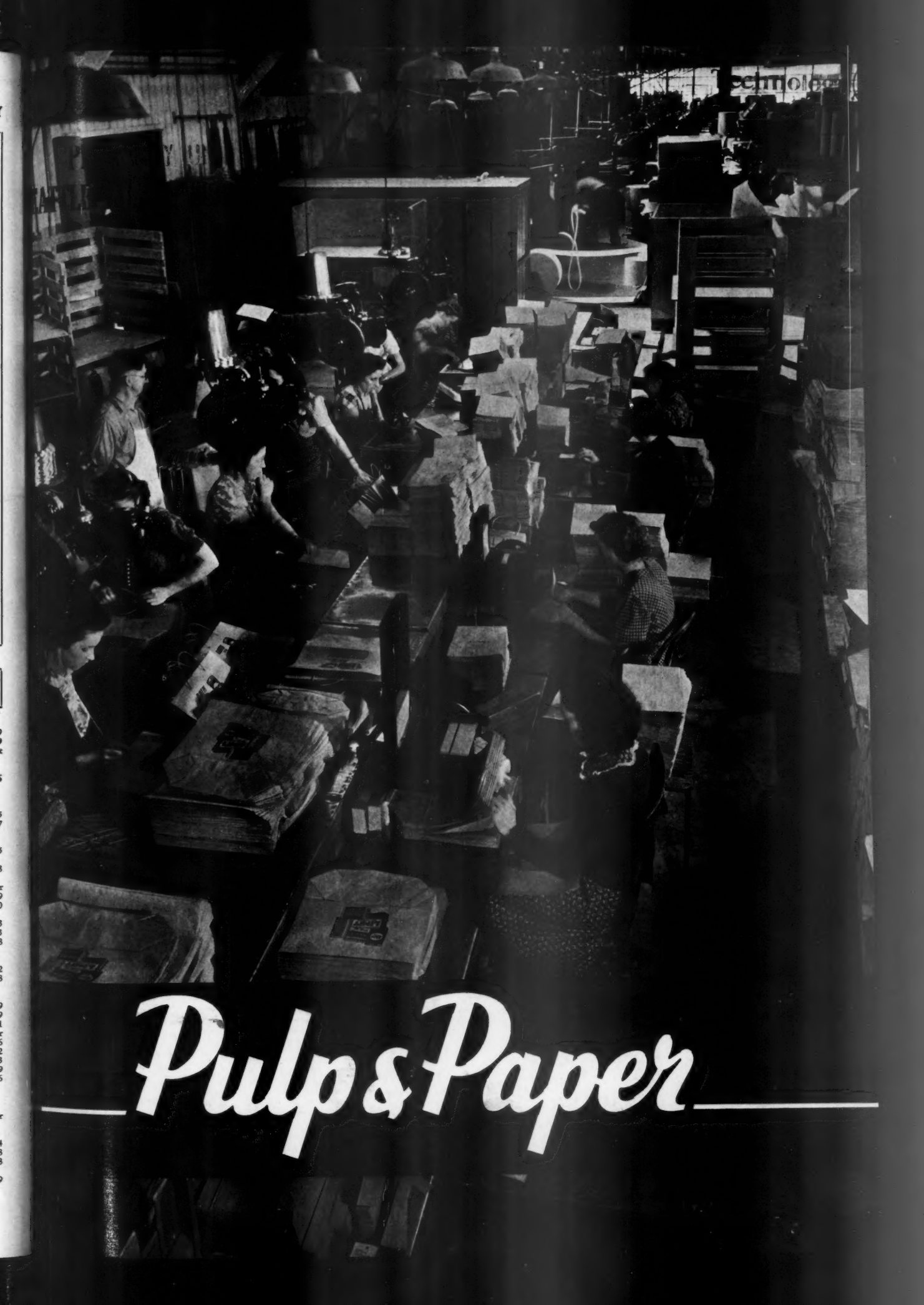
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Priorities May Soon Change to Allocations

Pulp and paper industry included in blanket industrial A-10 repair and maintenance order October 16th.

● Reports from Washington indicate that the system of materials priorities, not yet perfected, will soon be changed over to a system of allocations of commodities with defense requirements receiving prior allocations.

This is a natural evolution for the OPM and the Supply, Priorities and Allocations Board have been working in the dark not knowing with exactness the maximum productive capacity of certain essential materials industries. On the other hand they did not know with certainty the total of these materials that would be needed for defense purposes. With two unknowns in the equation the problem has been extremely difficult.

The long string of priorities starting with A 1-A and running down we don't remember how far, has been gradually shortened as recipients of low ratings such as B-8 for example, found that their ratings had no more standing with suppliers than would an apartment number. Upon learning the uselessness of their number they applied for a higher rating, and, if their arguments were believed good in Washington, they received a rating which could be honored by suppliers.

Last month when practically all industry was placed on an A-10 basis for repair and maintenance materials, the lowest rating of any value automatically became an A-10. The pulp, paper and paperboard industries were given this rating on October 16th.

As a flood of orders for repair and maintenance materials opened up after the new order was issued, an A-10 ceased to have any authority in the case of widely used materials. An example will show how this is working out. A Pacific Coast mill needed a replacement part in a hurry. They put an A-10 on their order but suppliers said they could not honor it. The mill asked the Pulp and Paper Section of OPM for a higher rating as the part was necessary to keep the plant operating efficiently. Anxious to cooperate, the OPM granted an A-7. A check with suppliers indicated that this was still too low, so a second request went to the Pulp and Paper Section for a still higher number. An A-2 was granted and the part obtained immediately for it was held in stock by several suppliers who dared not release it except to buyers with the highest ratings.

Whether allocations will be applied to repair and maintenance materials is not yet known. Possibly the blanket A-10 system with adjustments such as mentioned above, will be tried out for a time to find out if it is workable.

Allocations to Basic Raw Materials

● Allocations will be applied first to basic raw materials vital to the production of defense materials. The change from priorities to allocations is not expected to be a sudden shift. Reports state that the movement will be gradual with one commodity at a time being placed on an allocation basis to avoid unnecessary maladjustments. The OPM and the SP&AB are properly feeling their way.

On November 1st the Supply, Priorities & Allocations Board requested the OPM to develop an allocation system for all steel products. One reason given for this request was that priorities do not provide an adequate check against accumulation of excessive inventories.

"The SPAB's action was taken," stated the Wall Street Journal for November 3rd, "after Army and Navy officials reported that deliveries of structural steel, nickel steel, high-speed steel, tool steel and steel plate for defense purposes could no longer be assured through the priorities system alone. The adoption of a complete allocation system for steel in place of priorities will be gradual and will take some time, it was announced in Washington." . . .

"SPAB contemplates that the allocation system for steel products will proceed industry by industry and product by product in order that the nation's expanding steel capacity can be properly fitted to its expanding needs for steel. Allocation has already been applied to steel plate and pig iron."

Where To Peg Civilian Production

● Along with the development of an allocation system for all materials arises another problem. Where should civilian production be halted? It is gradually giving way to the defense program, but it is recognized in Washington that civilian production must be maintained at a certain level. The best point is the question. Two obstacles prevent drastic curtailment of civilian production. Morale of the country is the number one obstacle and that this is being considered is shown by the decision a few days ago of the SPAB to permit the continued production of home radios with substitution of other materials for aluminum and copper. Radio reception in homes is too important in war time from both entertainment and news viewpoints to be cut off.

The other obstacle is taxation. It is also linked with morale. The Federal government needs to collect more and more taxes for the defense program. To collect taxes it must have civilian business to produce the tax money for all of it cannot be taken from business coming out of defense orders. Increased taxation on a restricted civilian economy means the taking of a larger proportion of the national income that would be indicated if one were to consider the taxation increase on a percentage basis only. When increased taxes are accompanied by increased business morale is not adversely affected. But, when taxes jump and business drops morale is shaken. Besides, the law of diminishing returns takes hold and the higher taxes begin to yield less than the lower taxes used to.

It is, then, the problem of the government to find the point of civilian production best from the defense, morale and taxation angles.

Can Pulp and Paper Expand

● As the pulp, paper and paperboard industry is turning out to be far more important in the defense program than most people in government positions expected, its operations are not likely to be curtailed except by raw material shortages. Shifts will be made from civilian products to defense products where necessary, but over all production should not decline. This is not prophecy: it is merely an analysis of what is happening.

People are asking about expansion of pulp, paper and paperboard production. How can the industry expand, they ask, with the priorities limiting the needed materials? The answer is that the industry is expanding steadily. Whether it can offset that estimated shortage of 4 to 5 million tons no one can tell at present.

The industry is ingenious. It is noted for its ability to get extra tons out of a digester and over a machine in the face of figures showing it cannot be done. Against necessity the industry has always considered rated capacity figures as made of rubber and invariably proved they were.

Mills all over the country are removing bottlenecks by the use of very little strategic material. Others are rearranging processing to increase production. Idle machines are being taken out of ghost mills and put to work in successfully operating plants.

Where the products are badly needed major expansion of operating plants will likely be approved but whether they will be expedited by high priorities or allocations remains to be seen. Mills producing or capable of producing dissolving pulps for the making of nitrocellulose and for rayon will be expanded, if and when, the need for extra production becomes essential.

With the news of the day laying emphasis on shortages of materials the average reader is apt to think that the sale of all new equipment has been stopped. Such is not the case. Equipment for improving efficiency and expanding production is being bought daily. Much of it is now being made of materials not as yet scarce. Deliveries are slower than normal, probably due to a greater extent to the equipment manufacturers having so many orders, both non-defense and defense, than to a shortage of materials.

The pulp, paper and paperboard industries have always found ways to expand when expansion was necessary and, at this writing they are still doing it.

British Columbia Mills Given Permission To Expand

In view of their importance in developing markets in the United States and thus creating exchange vitally needed by Canada for the purchase of war materials manufactured in American factories, the Canadian government has granted several British Columbia pulp and paper companies authority to increase the cost of their contemplated expansion projects.

Powell River Company, for instance, which was recently empowered to spend $985,000 on sulphite plant extension, has been permitted to spend $1,313,000, and special tax concessions have been granted as well in respect to excess profit levies. As a result of the authorized outlay Powell River Company is expected to create revenues from the United States to the extent of $4,500,000 during the next three years.

Sorg Pulp Company, recently reorganized to operate the Port Mellon mill on Howe Sound, has been formally authorized to spend $1,000,000 on the understanding that at least $2,000,000 will be returned during the next three years.

British Columbia Pulp & Paper Company's expenditure of $741,000 has also been authorized in view of the prospect of creating $1,150,000 U. S. exchange.

● Pacific Mills, Limited, Ocean Falls, B. C., subsidiary of Crown Zellerbach Corporation, applied some time ago to Ottawa for approval to expend over a half million dollars in improvements and expansion of production.

The Canadian government is reported to have just given its approval within the last few days on the basis that the expenditure of $585,000 by Pacific Mills will return to Canada $2,244,750 in United States funds during the coming three years. Over this period the mill has been granted special tax concessions.

For purposes of income taxes and excess profits taxes a deduction of one-third of the sum $585,000 is allowed for each of the three years. The company's application is said to have stated that the return on the contemplated expenditure would not be sufficient to justify making the investment required and assuming price fluctuation and after the war business risks, without tax concessions.

Sorg Begin Improvements At Port Mellon

● Dominion Construction Company of Vancouver, B. C., has been awarded a contract by the Sorg Pulp Company to carry out various improvements at the Port Mellon mill recently acquired from the Leadbetter interests.

The contract now awarded involves construction of a hotel to accommodate 40 people, bunkhouses to accommodate 60 persons, a new machine shop, dismantling the present machine shop and erection of several additional buildings. The recovery plant will be enlarged, as well as the boiler room.

A new machine room will be built 261 by 42 feet with concrete floor, wooden trusses and a flat roof of felt, asphalt and gravel composition.

Goldie, McCulloch Company of Vancouver will install a new boiler 37 feet in height.

Camas Men in Army Receive Promotions

Several former employees of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, who are now in the armed forces, have recently received promotions in the service. They are:

Kipling Aslin is now private first class and fourth class specialist; Leland Mayback has been promoted to captain; Robert W. Deutscher is private first class and fourth class specialist; Robert Tracy, private third class and third class specialist, working as X-ray technician; and Mat Haslett is acting corporal.

W. L. Raymond Dies in Seattle

Heart attack takes Vice President of Rayonier Incorporated

● Walter Lloyd Raymond, vice president of Rayonier Incorporated, located in the Northwest executive offices in Seattle, died unexpectedly of a heart attack at 11 p.m. Sunday evening, November 9th, at the home of friends in Seattle. His sudden passing was a severe shock to his many friends in the Northwest and throughout the country.

Mr. Raymond had returned in the afternoon from a week end visit to Port Angeles with Mrs. Raymond, who remained in that city for a visit with her parents, Mr. and Mrs. Thomas T. Aldwell.

As an associate of Edward M. Mills, president of Rayonier Incorporated, Lloyd Raymond played a major role in the development of wood pulp production in the State of Washington to its present importance as a major industry and as an employer of thousands of citizens. His contribution to the greater utilization of the timber resources of the Pacific Northwest for the benefit of the people of this region, was as a developer of Rayonier Incorporated, the world's largest producer of dissolving wood pulps (the raw material for rayon, cellophane and plastics), and as a major producer of wood pulps for paper manufacturing.

Today, fourteen and a half years after the first mill was built at Shelton, Washington, Rayonier Incorporated operates five large mills: pulp mills in Shelton and Tacoma; a pulp and paper mill at Hoquiam; a pulp and commercial sawmill at Port Angeles, all in the State of Washington: and, a pulp mill in Fernandina, Florida.

Mr. Raymond's life was a typical American success story. He began at the bottom of the ladder and through ability and hard work became a leader in his own company and in the entire industry. Among his associates in Rayonier Incorporated, Lloyd Raymond was recognized as a man of outstanding ability. A keen analyst of both operating and policy problems, he intuitively went to the heart of them and had the faculty of rendering prompt and sound decisions. His memory of details was remarkable and his capacity for work amazing. His loyalty to all who worked with him engendered in return an enthusiastic loyalty toward Rayonier and himself.

Walter Lloyd Raymond was born 47 years ago in Minocqua, Wisconsin. Following his graduation from Valparaiso University, Valparaiso, Indiana, his introduction to the pulp and paper industry was as secretary to K. O. Fosse, then manager of the logging and timber department for the Minnesota and Ontario Paper Company at International Falls, Minnesota. This was in 1914.

After war was declared in April, 1917, he volunteered and served at United States Army Headquarters in France until early in 1919. Receiving his honorable discharge from the army, he returned to the Minnesota and Ontario Paper Company in May of 1919 as secretary to the late E. W. Backus, president of the company. Early in 1920, Mr. Raymond came to the State of Washington, working for a few months with a lumber operation at Curlew, Washington.

It was in August, 1920 that Mr. Raymond joined the organization of the Washington Pulp & Paper Corporation at Port Angeles, of which Norman B. Gibbs was then general manager. The first unit of the newsprint mill was under construction at that time, and, together with Mr. Gibbs, he handled all the corporation's end of the construction job until the mill was completed. When the mill began producing newsprint in November, 1920, Mr. Raymond remained as assistant manager under Mr. Gibbs until late in 1927.

W. L. RAYMOND, A Builder of Rayonier

Mr. E. M. Mills, president of the Washington Pulp & Paper Corporation at that time and also president of the Rainier Pulp & Paper Company, recognizing Mr. Raymond's ability, selected him for special work in San Francisco.

In March, 1928 Mr. Raymond was elected secretary of the Rainier Pulp & Paper Company, and in August of the same year he was elected secretary of the Grays Harbor Pulp & Paper Company. He was transferred to Seattle in 1929 to head the Northwest executive office for Rainier Pulp & Paper Company, the Grays Harbor Pulp & Paper Company and the Olympic Forest Products Company, which was then in the course of construction at Port Angeles.

Mr. Raymond was elected a vice president of the Olympic Forest Products Company in July, 1931, and in June, 1932 he became a vice president of the Rainier Pulp & Paper Company and the Grays Harbor Pulp & Paper Company. When the three companies were consolidated on November 2, 1937 into Rayonier Incorporated, Mr. Raymond was made a vice president of that company, which position he held at the time of his death.

As a World War veteran he was a member of Seattle Post No. 1, American Legion. Mr. Raymond was active in fraternal circles, belonging to Port Angeles Lodge No. 69, F. & A. M. and the Nile Temple of the Shrine in Seattle. He was also a member of the Rainier Club, the Seattle Golf Club and the Washington Athletic Club.

Surviving Mr. Raymond are his widow, Norah Aldwell Raymond, whom he married on December 20, 1930, two daughters, Lloys Doreen, age 7 years and Noreen Ann, age 2 years, of Seattle; and a sister, Mrs.

John J. Rellahan, Upper Montclair, N. J.

The services were held on Wednesday afternoon, November 12th in the chapel of the Bonney-Watson Company, Seattle, with the Reverend Elmer R. Christie, pastor of the Episcopal Church of the Epiphany officiating. The large chapel was completely filled with flowers from Mr. Raymond's friends who attended in numbers exceeding its seating capacity.

Entombment at Acacia Memorial Park followed the services. The Seattle offices of Rayonier Incorporated and of the Crown Zellerbach Corporation closed at noon on November 12th in honor of Mr. Raymond.

Spaulding Making Mill Improvements

● During the past month the Spaulding Pulp and Paper Company, Newberg, Oregon, has built a 20-acre log pond, which is now nearly completed. This pond is located on the company's property recently acquired from the Spaulding Logging Company, and will be used for storing and sorting logs for the mill. The large decks of logs formerly seen around the mill will be a thing of the past after the log pond goes into use early this coming year.

This plant buys hogged fuel and sawdust from the neighboring sawmills to furnish the power for the mill. Because of the change in log handling methods it is necessary to modify the fuel line, from the storage pile to the power plant. A rubber belt and conveyor chain combination is to be used for handling the fuel. A small "Caterpillar" tractor with LaPlant-Choate bulldozer is to be used at the fuel pile to keep it all bunched together.

Flow boxes have been replaced and the white water system and rifflers have been rearranged. One Bingham stock pump of 9,000 gallons per minute capacity has been installed, replacing three less efficient stock and water pumps. All iron white water piping and stock pipe lines have been replaced with wood and other non-corrosive piping material and the lines simplified, according to James B. Wilt, manager.

Hunters Keep Bag A Secret

They're still wondering at the Port Angeles Fibreboard Products mill just how many deer Chief Chemist Nelson Hartnagel, Shift Engineer "Bill" Blakey of the power division and Personnel Supervisor Ralph Lawrence bagged on their hunting expedition last month into the Okanogan country. The boys at the mill were shown one 300-pound, four-point beauty that the trio brought home, shot by Blakey. The implication was put out that two more like this one were hanging in the uptown cold storage lockers. There was some considerable doubt at Fibreboard about this, but nobody bothered to check up on the hunters for sure, so none but Blakey, Hartnagel and Lawrence knows the truth—and they're through talking.

Cellulose Products Laboratory Established in Tacoma

To supervise technical control systems in several Eastern and Middle Western paper mills and to conduct research toward the development of new paper specialties.

THE Cellulose Products Laboratory was established in Tacoma early in November by E. D. Rich, well known in the Pacific Coast pulp and paper industry for his technical work. The laboratory's temporary location is at 1105 Division Avenue pending the construction of a modern laboratory building now designed but for which the site in Tacoma has not as yet been selected. It is expected the permanent laboratory will be completed in March.

"The Cellulose Products Laboratory has been established," stated Mr. Rich, "to supervise technical control systems in a number of Middle Western and Eastern paper mills and for research toward the development of new paper specialties."

Mr. Rich, who will serve as director, holds a master's degree from the Massachusetts Institute of Technology. He was associated with Rayonier Incorporated in the control laboratory of the Port Angeles Division for 3½ years, from 1935 to 1938. Leaving Port Angeles Mr. Rich worked for a year at Camas with the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, before going with the Oregon Pulp & Paper Company at Salem, Oregon, in 1939 as technical supervisor. He resigned from this position at the end of July this year to prepare for the establishment of the laboratory in Tacoma.

At the opening of the laboratory in temporary quarters the staff, in addition to Mr. Rich, consisted of Harold Lange, analytical chemist; William Thorpe, assistant analytical chemist, and Miss Margaret McConahey, secretary. Within a year Mr. Rich expects his staff will be enlarged to 12 or 15 men.

Mr. Lange graduated in chemistry from Oregon State College in Corvallis and has done much advanced work in pulp and paper analysis. Mr. Thorpe completed his work for a bachelor's degree in chemistry from the College of Puget Sound, Tacoma, in June of this year.

Equipment for the temporary laboratory is installed and the additional apparatus for the permanent laboratory has all been ordered according to Mr. Rich.

The new laboratory building on which construction will start shortly will include on the main floor, a reception room, office, library, machine shop, constant humidity room, main analytical laboratory and several smaller laboratory rooms.

The lower floor will contain a power plant and a 42-inch paper machine having a single cylinder and six 36-inch in diameter dryers. It will be equipped with facilities for coating or impregnation consisting of a size press and impregnating tub with scrapers, doctor knives and brushes.

The routine work of the Cellulose Products Laboratory will include standard pulp and paper testing and supervision of the technical control systems in the plants of the mill clients. Special analysis will be performed when required. Research work on the development of new products and new methods will be carried on as a regular function of the laboratory.

Coos Bay Makes Mill Improvements

● During the current year the Coos Bay Pulp Corporation, a wholly-owned subsidiary of Scott Paper Company, at Empire, Oregon, has made improvements in the plant to the extent of some $20,000, according to C. Wylie Smith, manager.

Modern facilities were installed for the convenience of the employees, consisting of a well lighted, radio equipped rest room with lockers for each of the workmen, toilet facilities, washing facilities and showers.

A steam turbine was installed, replacing a steam engine, for driving a hot-air fan on the pulp drying machine.

Another installation was a hood built over the wet end of the machine and an exhaust fan system. The plans and materials were obtained from the firm of Drew and Hoffman of Portland.

A salt-water pumping system has been installed for cooling in the Jenssen coolers and the digester relief coolers. This system has capacity of delivering 2,000 gallons per minute. It was put in to relieve the fresh water system, which is heavily pressed during the dry season, and the fresh water gets up to a temperature of about 67 degrees during part of the year.

"Pop" McLennan Dies In Port Angeles

● One of the best-loved characters connected with the pulp and paper industry at Port Angeles, Washington, was lost October 30 in the death of C. F. (Pop) McLennan, 74, retired watchman of Fibreboard Products, Incorporated "Pop," as he was known throughout the Fibreboard plant and to hundreds of friends outside, never fully recovered from injuries received when an automobile struck him as he was walking to work a year ago. He retired from active duty last spring after 17 years' service with the mill. "Pop" was an ardent sports fan and whenever any of the Fibreboard gang wanted a friendly argument or cared to risk a cigar on the outcome of a fight or game, he usually called on "Pop."

George Gorman Passes In St. Helens

● George L. Gorman, formerly a beater engineer at St. Helens Pulp and Paper Company, St. Helens, Oregon, died at his home November 3rd, following a long illness. Funeral services were held November 5th at the St. Helens Methodist church and interment was at the Rose City cemetery in Portland.

Mr. Gorman was a native of England, born December 4th, 1885. He came to the United States in 1907 and moved to St. Helens about 15 years ago with his family. About a year ago he retired from the pulp and paper industry because of ill health.

He is survived by his wife, Mrs. Alice Gertrude Gorman; three sons, Joe, Alfred and Earl, all of St. Helens; and one daughter, Mrs. Violet McWilliams of the same city; two brothers in Canada and one in England, and three grandchildren, Buddy Dale McWilliams, Jack LeRoy Gorman and Dennis George Gorman, all of St. Helens.

John Ashby Visits Washington Mills

● John Ashby, chief chemist of Westminster Paper Company, Limited, New Westminster, British Columbia, was a visitor at the Camas, Washington, plant of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, on November 5th. Mr. Ashby attended the TAPPI dinner meeting in Camas that evening.

Peabody Visits Longview Plant

● L. C. Peabody, assistant to the president, Longview Fibre Company, with headquarters in San Francisco, spent the week of October 20th at the company's plant at Longview, Washington.

Goldsmith's Trip Celebrates Twentieth Anniversary

● D. J. Goldsmith, secretary of the Crown Zellerbach Corporation, accompanied by Mrs. Goldsmith left on a month's trip to New York and Boston, returning home by way of New Orleans and the Grand Canyon. The trip, a combined business and pleasure journey, also serves to commemorate the Goldsmith's twentieth wedding anniversary.

Bemis Bros. Buy Jaite Pacific Coast Bag Plants

Bemis Bros. Bag Company, with headquarters in St. Louis, Missouri, has purchased the St. Helens, Ore., and Wilmington, Calif., bag factories of The Jaite Company, it was announced the first week in November. It is reported that the St. Helens and Wilmington units will be separate subsidiary corporations of the Bemis company, one of the largest bag manufacturers of the United States, and will be known as the Jaite Paper Bag Company, operating without change of personnel, according to L. A. Linville, manager of the Oregon plant. G. A. Bauman is manager of the Wilmington plant.

The sale is made at a time when the plants are working at near capacity. Although few orders are accounted for directly by national defense, the defense boom has inspired the boost in business by stimulating building to near-boom proportions in many areas.

At present the St. Helens plant, which has manufactured multi-wall bags since 1928, operates two shifts per day, listing a staff of over 100 men and women. Indications are, Linville said, that this two-shift operation will continue for some time, and he added that some additional bags could be produced by the company if more stock could be obtained.

The Jaite plants produce multi-wall cement bags under Bates Valve Bag Company license, securing their kraft paper from the St. Helens Pulp & Paper Company at St. Helens, Oregon.

Stromme Promoted By Longview Fibre

● Peer Stromme, formerly of the paper order department, Longview Fibre Company, Longview, Washington, was promoted to the company's San Francisco, California, office. This advancement was effective November 1st.

Ray Hatch Vacations In California

● R. S. Hatch, research director of Weyerhaeuser Timber Company, Longview, Washington, left, with Mrs. Hatch, for a two weeks' vacation on October 14th. It was spent in California at Del Monte, Carmel and San Francisco.

Rayonier Appoints Breitenbach Production Manager at Port Angeles

● William E. Breitenbach, formerly chief chemist of the Grays Harbor division of Rayonier Incorporated, now is production manager of pulp operations at the Port Angeles division of the company. His appointment to the position was announced in October by A. W. Berggren, resident manager at Port Angeles.

Mr. Breitenbach is a Rayonier veteran, having been with the company since the start of its pulp opreations at Shelton in 1927. He was chief chemist at Shelton two years, then transferred to Grays Harbor in the same capacity and remained there until his shift to Port Angeles.

Before joining Rayonier he was with the Marathon Paper Mills Company at Rothschild, Wisconsin. He holds the degree of Bachelor of Science in chemistry from the University of Wisconsin.

Mr. Breitenbach's wife and two sons have joined him at Port Angeles.

WILLIAM E. BREITENBACH Named Rayonier Production Manager at Port Angeles.

Superintendents Outline Interesting December Meeting

● Chairman Sam A. Salmonson of the December meeting of the Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association, and his co-chairmen, Andrew D. Hawley and Walter A. Salmonson, have completed final plans for the semi-annual meeting to be held at the New Washington Hotel in Seattle, December 5th and 6th.

Fred R. Armbruster, chairman of registratiton, plans to have the registration desk ready for action at 8:30 a. m. Friday, December 5th. He emphasizes the necessity for those planning to attend to make their hotel reservations immediately, sending them to him at the Textile Tower, Seattle. Seattle hotels are exceptionally busy this fall because of the accelerated defense activities of the vicinity.

Program Starts Friday

● Although the official program doesn't begin until Friday evening, the chairman reports that arrangements will be made for all who wish to play golf, bowl or do some skeet shooting on Friday afternoon.

Starting at 8:30 p. m. there will be an informal masked party. No costumes are expected but all who come must wear a mask, either plain or fancy as the wearer wishes. Good music and entertainment will enliven the evening and a buffet supper will be served.

Saturday Program

● No superintendent's meeting could get under way without the ever popular "Wake 'Em Up Breakfast" with its snappy music and wisecracking toastmaster to put all in good humor for the business session. After the 8:30 breakfast the papers will be presented at 9:30 a. m.

Merrill E. Norwood, first vice chairman of the Pacific Coast Division, has arranged for three interesting papers. Gus Ostenson, paper mill superintendent for the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, will present a paper on "Wire Life."

Robert A. Baum, assistant chief chemist of the Fernstrom Paper Mills, Pomona, California, will present a paper entitled "An Investigation of the Effect of Mixed Pulp Furnishes on Sheet Properties."

The third paper will be offered by Roger E. Chase, president of R. E. Chase & Company, Tacoma, and will be titled, "Rotameters and Their Use In the Paper Industry."

Discussion will follow each paper. After the discussions have ended the Pacific Coast Division will hold a business meeting for the election of officers for 1942.

Stag Luncheon

● The men will attend a luncheon on Saturday and hear a speaker from within the industry discuss problems of the moment. The name of the man to speak will be announced later.

Round Table Discussions will take up the afternoon. They will be in the form of panel discussions, one for pulp and one for paper. George H. McGregor, second vice chairman of the Pacific Coast Division, will serve as chairman of the pulp group and Merrill E. Norwood, first vice chairman, will handle the paper group. Assisting each chairman on the panel will be two superintendents and two technical men.

While the men are spending the afternoon in discussion the ladies will find bridge tables available and tea will be served at 4 o'clock.

At 6:30 on Saturday evening a receptiton will be held in honor of the new and retiring officers of the Pacific Coast Division and the representative of the national association who is expected to be present. The banquet will start at 7 p. m. and will be followed by dancing.

Again, a reminder that reservations should be sent immediately to Fred R. Armbruster, chairman of registration, Great Western Division, The Dow Chemical Company, Textile Tower, Seattle.

Camas Posts Roll of Honor

Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, has conspicuously posted a "roll of honor" at the time office entrance, which shows the names and addresses of employes in the nation's armed forces. J. E. Hanny, resident manager, and V. C. Gault, personal supervisor, have written the men, letting them know that the management is keeping them in mind and that there are opportunities open when they return from the service.

Mr. Hanny says, "The boys from here have a job waiting for them when they come back." He also suggests that the morale of the armed forces would be considerably improved if every employer would communicate with his employes who have joined the armed forces.

The roll of honor included 57 names on the first of November. This list is revised each month, correcting addresses, adding names and deleting others who have left the service. Friends are urged to use the list for correct addresses and to write letters to the boys.

Weyerhaeuser Men Form Basketball League

● Inter-department basketball teams of Longview Mill, Pulp Division Weyerhaeuser Timber Company, Longview, Washington, have been organized, forming a five-team company league. The first game was played November 6th.

George Klapp, of the office, and Collin Slane, of the credit union, are the basketball team organizers.

McIntyre Studies Mill Safety Work

● John McIntyre, safety engineer, Powell River Company, Limited, Powell River, British Columbia, visited the Crown Zellerbach Corporation plants at Port Angeles, Washington; Camas, and West Linn, Oregon, on October 31st and November 3rd and 4th, respectively. R. H. Williams, of the Crown Zellerbach safety staff, accompanied McIntyre to the Camas and West Linn mills.

At the SUPERINTENDENTS' MEETING

in Seattle, December 5th and 6th, the following papers will be presented:

"Wire Life," by Gus Ostenson, Paper Mill Superintendent, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas.

"An Investigatiton of the Effect of Mixed Pulp Furnishes on Sheet Properties," by Robert A. Baum, Assistant Chief Chemist, Fernstrom Paper Mills, Pomona, California.

"Rotameters and Their Use in the Paper Industry," by Roger E. Chase, President, R. E. Chase & Company, Tacoma.

Port Angeles Deer Hunters Get One Apiece

● Four hunters, four deer—that's the bag netted on a hunting trip last month by a party of four from Port Angeles, Washington, that included two pulp and paper mill men. In the group were M. R. Cashman, personnel and safety supervisor of Port Angeles division, Crown Zellerbach Corporation, and Nels Botnen of the Port Angeles Fibreboard, Incorporated, force. With the men were Mrs. Cashman and a friend, Miss Marie Langley. Each of the four got a buck in the upper Dungeness country near Port Angeles, the largest weighing about 180 pounds.

Machine Room Team Leads Longfibre Bowling League

● The machine room team of the Longfibre Bowling League, Longview Fibre Company, Longview, Washington, was leading the other teams the first of November, with 22 points, having won 16 games and lost two.

The bag factory team was second, with the rest of the teams ranging in the following order: construction, box factory, office, mechanics, pulp mill, supervisors and control.

Walter DeLong Takes a Vacation

Walter A DeLong, operating manager of the Puget Sound Pulp & Timber Company, Bellingham, took a four weeks' vacation in October. Accompanied by Mrs. DeLong and his son, Lieutenant Robert DeLong, he drove to southern California for a rest. A side trip was made to Ensenada, Mexico.

Part of the vacation was a "postman's holiday," for Mr. DeLong visited a number of the major industrial plants in southern California, including several aircraft factories.

Vic Hughes Given Birthday Party

The office force of the Pacific Coast Paper Mills of Washington, Bellingham, gave a birthday party on October 27 to honor Victor A. Hughes, secretary-treasurer of the company.

A gift from the group to Mr. Hughes was accompanied by an unusual card made from a piece of tissue, the first to come off the new No. 2 paper machine, which started up the morning of the party.

Washington Pulp Starts Defense Bond Wage Deduction Plan

Employes of the Port Angeles Division, Crown Zellerbach Corporation, were notified by resident manager Raymond Dupuis early this month that the company is making it possible for them to purchase U. S. Defense Savings Bonds by means of salary or wage reductions. Any regular employe of the mill may authorize allotments from his pay check for the purchase of the bonds in specified denominations, Mr. Dupuis said. M. R. Cashman, personnel and safety supervisor, has been appointed Port Angeles mill representative to receive applications for the bonds and handle authorizations for payroll deductions.

More Camas Men Join Armed Forces

● Seven employees of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, recently entered the nation's armed forces. They are Clarence Harris, John Meagher, Clayton R. Dudesill, a lieutenant of the reserves; Ellis B. Newkirk, Bernard J. Jacoby, James A. Butterick, Jr.; and Robert L. Miller of the accounting department.

Lawrence Killam Re-elected President of B. C. Pulp

● Lawrence Killam was re-elected president of B. C. Pulp & Paper Company at the annual meeting held recently in Vancouver, B. C.

George Kidd is vice-president; Oscar A. Jorgensen treasurer; Ethel M. Dominy, secretary; W. H. Malkin, R. C. Buchanan, Cecil Killam of Vancouver, and I. W. Killam of Montreal, directors.

At the annual meeting Mr. Killam reported that capacity production had been maintained at the company's plants during the past year and that production exceeded 100,000 tons of pulp. Prices appeared to be stabilized at levels which would permit the company to earn first mortgage interest with something to spare.

The company carried out a $1,159,000 expansion program in 1937 and is now proceding with a $750,000 program to increase capacity at both mills by about 20 per cent.

Eberly Thompson Has Close Call

● Eberly Thompson, owner and general manager, Perfection Twine and Bag Company, Camas, Washington, narrowly escaped suffocation in a quicksand bog while duck hunting the first of November, near the Columbia river.

Thompson was searching for a wounded bird in a swamp during the late afternoon, when he became fouled in quicksand. Attempting to extricate himself, he sunk deeper and deeper. After two hours of calling and struggling Thompson was embedded up to his shoulders, when his calls were heard by an elderly farmer living in the neighborhood.

It took the farmer nearly an hour to free Thompson from the clutches of the quicksand.

Frank Hamilton Appointed Sulphite Superintendent at Powell River

Frank J. Hamilton, formerly sulphite superintendent for British Columbia Pulp & Paper Company at Port Alice, has been appointed superintendent of the sulphite department of Powell River Company.

Mr. Hamilton is now supervising construction of Powell River's sulphite expansion program which is expected to bring daily production to 150 tons.

The position is a new one, necessitated by Powell River's departure from a straight newsprint policy which was for many years traditional.

Mr. Hamilton started his pulp making career with the old Riordan Pulp & Paper Company in Quebec, where for a while he was foreman in charge of semi-commercial cooking and bleaching research. While thus engaged he worked for some years under Prof. J. A. Heusser, an authority on cellulose chemistry in Canada.

In 1934 Mr. Hamilton went to Poland with the Steinhagen-Saenger sulphite mill at Wlolawek, where he acted in an advisory capacity and assisted in developing rayon pulp.

Two years later he came to the west coast as chemist with the British Columbia Pulp & Paper Company at Woodfibre, where we was in charge of the bleaching operations. Then he went to the Port Alice mill in a similar capacity, being appointed sulphite superintendent in 1939, succeeding Andreas Christensen, who is now with the Spruce Falls Power & Paper Company at Kapuskasing, Ontario.

Camas and West Linn Institute Defense Bond Systems

The Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, has made it pissible for company employes to purchase U. S. defense savings bonds by means of salary or wage deductions.

Any regular employe of the mills may authorize the allotment from his or her pay check for the purpose of purchasing these defense savings bonds in specified denominations, and when the employe has saved the required amount, the bond or bonds will be purchased and registered to his or her name.

J. A. Ream, personnel and safety supervisor at the West Linn, Oregon, plant, and H. E. Burnett, assistant to the personnel and safety supervisor at Camas, Washington, have charge of the defense payroll deductions at these two plants.

Wood Characteristics and Viscosity Testing Discussed by TAPPI

THE second dinner meeting of the 1941-1942 series sponsored by the Pacific Section of TAPPI was held at the Crown Willamette Inn, Camas, Washington, on Tuesday evening, November 4, 1941.

Edward P. Wood, vice chairman of the Pacific Section, presided in the absence of Chairman Carl E. Braun who was in California. Papers devoted to two subjects of basic interest to the industry were presented and discussed.

Presented in competition for the Pacific Section's Shibley Award was a paper on "Influence of Wood Characteristics on Pulp Quality," by C. A. Anderson of the technical department of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas. Mr. Anderson's paper appears in this number. Discussion followed its presentation.

The second paper was entitled "Viscosity Testing of Wood Pulp," by Dr. Leo Friedman, assistant professor of chemistry, Oregon State College, Corvallis, Oregon, and Roger Dana, formerly a student at Oregon State but now with the Longview Fibre Company, Longview, Washington. The history and development of viscosity testing were outlined and the work of the more important investigators discussed. Dr. Friedman, who read the paper, stated that at the present stage of development viscosity testing appears to be feasible for checking the several processes in the manufacture of pulp, but that it has not yet proven satisfactory for checking one finished pulp against another from a different mill. Discussion followed the paper which is published in this issue of PACIFIC PULP & PAPER INDUSTRY. (See also "Cuprammonium Viscosity as a Pulp and Paper Mill Control Test," by E. D. Rich, PACIFIC PULP & PAPER INDUSTRY, November, 1940.)

Dr. LEO FRIEDMAN, Discussed Viscosity Testing

Vice Chairman Wood introduced those at the speakers' table: Carl Fahlstrom, past chairman of the Pacific Section and assistant manager, Longview Fibre Company; W. R. Barber, past chairman and technical director, Crown Zellerbach Corporation, Camas; Fred A. Olmsted, past chairman of the Pacific Section, member of the executive committee, and technical supervisor, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington; and, Harry H. Richmond, member of the Pacific Section executive committee and chief engineer, Electric Steel Foundry Company, Portland.

The next dinner meeting to be held by the Pacific Section, announced Mr. Wood, will be held in Longview, Washington, on Tuesday evening, January 6th. The subject will be "Lime—Its Use and Recovery," and three speakers under the chairmanship of G. H. Galloway, assistant technical supervisor, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, will present their ideas in the form of a panel discussion.

Mr. Wood announced that no meeting would be held in December due to the annual meeting of the Superintendents which is to be held this year in Seattle at the New Washington Hotel, December 5th and 6th.

A vote of thanks was given to Walter C. Jacoby, technical department of the Camas mill who made arrangements for the Camas dinner meeting.

The following men attended the dinner meeting held by the Pacific Section of TAPPI at Camas, Washington, November 4th, 1941:

O. C. Abbott, Bristol Co., Seattle, Wash.; **C. E. Ackley,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Lebanon, Ore.; **C. A. Anderson,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **F. R. Armbruster,** Great Western Division, Dow Chemical Co., Seattle, Wash.; **John Ashby,** Westminster Paper Co., New Westminster, B. C.; **R. E. Astle,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Leo C. Baltzelle,** Pacific Indemnity Co., Seattle, Wash.; **W. R. Barber,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Chester Beals,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Eudore A. Berry,** Longview Fibre Co., Longview, Wash.

Paul S. Billington, Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Louis H. Blackerby,** Pacific Pulp & Paper Industry, Portland, Oregon; **George H. Beisse,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Robley A. Butler,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **J. E. Cater,** Hawley Pulp & Paper Co., Oregon City, Oregon; **R. E. Chase,** R. E. Chase & Co., Tacoma, Wash.; **R. E. Chase, Jr.,** R. E. Chase & Co., Portland, Oregon; **J. W. Clarke,** Longview Fibre Co., Longview, Wash.; **Fred Covel,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **J. V. B. Cox,** Hercules Powder Co., Portland, Oregon.

R. E. Dana, Longview Fibre Co., Longview, Wash.; **J. D. Darby,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Leslie Darr,** Longview Fibre Co., Longview,

The January TAPPI Dinner

Will be held on Tuesday evening, January 6th, at the Hotel Monticello, Longview, Washington.

The entire evening will be devoted to a panel discussion of "Lime—Its Use and Recovery." Three speakers under the chairmanship of G. H. Galloway, Assistant Technical Supervisor, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, will thoroughly explore the use and recovery of lime in the pulp and paper industry.

Wash.; **Thurman E. Dear,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Harold Deery,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **David M. Dibrell,** Longview Fibre Co., Longview, Wash.; **John Doering,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **R. E. Drane,** St. Helens Pulp & Paper Co., St. Helens, Oregon; **E. G. Drew,** Drew & Hoffman, Portland, Oregon.

C. A. Enghouse, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., West Linn, Oregon; **A. E. Erickson,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Don Erickson,** Oregon Pulp & Paper Co., Salem, Oregon; **Floyd Ewing,** Longview Fibre Co., Longview, Wash.; **Carl Fahlstrom,** Longview Fibre Co., Longview, Wash.; **W. L. Failing,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Francis W. Flynn,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **J. P. Foley,** Hawley Pulp & Paper Co., Oregon City, Oregon; **Leo Friedman,** Oregon State College, Corvallis, Oregon; **C. S. Funk,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.

Carl L. Gehman, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Harry W. Glenn,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **W. G. Goodwin,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **C. H. Graham,** Bumstead-Woolford Co., Portland, Oregon; **T. H. Grant,** Columbia River Paper Mills, Vancouver, Wash.; **John Grill,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **R. B. Haight,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **R. N. Hammond,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **John F. Hart,** Longview Fibre Co., Longview, Wash.; **H. A. Hauff,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Jan Haugerod,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., West Linn, Oregon; **Milan Hill,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Edw. J. Hinde,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.

H. F. Hoehne, Longview Fibre Co., Longview, Wash.; **C. F. Holcomb,** Edison Storage Battery Supply Co., Seattle, Wash.; **W. F. Holzer,** Central Technical Department, Crown Zellerbach Corp., Camas, Wash.; **Dr. H. H. Houtz,** Central Technical Department, Crown Zellerbach Corp., Camas, Wash.; **C. M. Howell,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Otto L. Hudrlik,** The Flox Co., Portland, Ore.; **Lloyd O. Hutchinson,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **J. B. Hyde,** Central Technical Department, Crown Zellerbach Corp., Camas, Wash.; **Lyal Jones,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **W. A. Kelly,** Waterbury Felt Co., Portland, Oregon.

John W. Klein, Longview Fibre Co., Longview, Wash.; **Harold Lange,** Cellulose Products Laboratory, Tacoma, Wash.; **Julius La Pointe,** Longview Fibre Co., Longview, Wash.; **J. E. LeTourneux,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash. **John A. Liedtke,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Clyde M. Lieser,** Columbia River Paper Mills, Vancouver, Wash.; **John J. Lobb,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **E. E. Logsdon,** Hawley Pulp & Paper Co., Oregon City, Oregon; **C. J. McAllister,** Simonds Worden White Co., Portland, Oregon; **C. R. McCully,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Lloyd McDonald,** Longview Fibre Co., Longview, Wash.

John J. McNair, Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Robert W. Martig,** Brown Instrument Co., Portland, Oregon; **F. R. Martin,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Vern Mauerman,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Otto Michaelis,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Paul F. Miescke,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **R. G. Mispley,** Central Technical Department, Crown Zellerbach Corp., Camas, Wash.; **T. E. Moffitt,** Hooker Electrochemical Co., Tacoma, Wash.

A. G. Natwick, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **B. E. Natwick,** Washougal, Wash.; **George Nelson,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **S. Norman,** Gillen-Cole Co., Portland, Oregon; **M. H. Norton,** Longview Fibre Co., Longview, Wash.; **Max R. Oberdorfer,** St. Helens Pulp & Paper Co., St. Helens, Oregon; **F. A. Olmsted,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **A. W. Olson,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Gus Ostenson,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Wm. Pittam,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **Herbert Peterson,** Longview Mill, Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **J. C. Plankinton,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.

E. D. Rich, Cellulose Products Laboratory, Tacoma, Wash.; **H. H. Richmond,** Electric Steel Foundry Co., Portland, Oregon; **E. J. Roake,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., West Linn, Oregon; **Ben H. Reed,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Wm. Runckel,** Oregon State College, Corvallis, Oregon; **Walter A. Salmonson,** Simonds Worden White Co., Seattle, Wash.; **Curtis E. Sawyer,** Perfection Twine Co., Camas, Wash.; **Harlan Scott,** Pacific Pulp & Paper Industry, Seattle, Wash.; **H. J. Shelton,** Longview Fibre Co., Longview, Wash.; **Brian Shera,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma, Wash.

Carl Sholdebrand, Hawley Pulp & Paper Co., Oregon City, Oregon; **Ray Smythe,** Rice Barton Corp., Portland, Oregon; **C. A. Stevey,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Chauncey L. Storms,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Bert E. Sullivan,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **F. F. Sullivan,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **V. L. Tipka,** Hawley Pulp & Paper Co., Oregon City, Oregon; **Preston Varney,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **H. A. Vernet,** A. E. Staley Mfg. Co., Portland, Oregon; **Harold C. Wall,** Longview Fibre Co., Longview, Wash.; **W. A. Wenzel,** Longview Fibre Co., Longview, Wash.; **Don G. Wilson,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **James A. Wilson,** Hawley Pulp & Paper Co., Oregon City, Oregon; **D. D. Wilma,** Longview Fibre Co., Longview, Wash.; **Chas. H. Witt, Jr.,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Roy L. Wohlsein,** Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash.; **Edward P. Wood,** Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; **E. W. Zane,** Oregon Pulp & Paper Co., Salem, Oregon.

Fibreboard Deer Hunters Return Empty Handed

● "Who said anything about deer? We just like the exercise and the great outdoors." That was the answer Chief Engineer J. W. (Jess) Bonnar and belt tender Joe Stanley had for fellow workers at the Port Angeles Fibreboard Products mill when they came home from Okanogan deer country during the recent hunting season.

Bonnar and Stanley, according to authentic sources, packed in 15 miles, then packed out again a few days later with no venison. Some claim they wandered over into Canada without knowing it, which Bonnar declares is a gross slander.

Eight Camas Men Released From Military Services

Eight former employes of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, have received their discharge from the armed forces and are again with the company at Camas. These men are over the minimum age limit of 28 years.

These men are Clifford Pratt of the ordnance division, who has been in the service four months; George Rundquist, John R. Asher, Ivan L. Crawford, Ray E. Wadsworth, Gordon Keller, Phil Luch and Walter Newman.

Raymond P. Hill Visits Coast

Raymond P. Hill, president Pulp Bleaching Company of Wausau, Wisconsin, visited several Pacific Northwest mills late in October before returning home from Portland.

Despite the curtailment in the use of chlorine in bleaching, Mr. Hill reports increased interest in the modernization of bleach plants and in the design of new plants for construction when chlorine becomes more plentiful.

Fibreboard Men Complete Military Service

● Two employes of Fibreboard Products, Incorporated, at Port Angeles, Washington, returned to their jobs in October upon completion of a year's military service. Sergeant John Waldron and Private First Class Charles A. Boyd, who was rated a specialist, third class, were welcomed back to Fibreboard from Fort Worden, where they served with Battery A, 248th Coast Artillery.

Puget Sound Averaged 455 Tons Per Day in September

Average daily production for the company's Bellingham unbleached sulphite pulp mill was 378 tons for the first nine months of 1941.

● The Puget Sound Pulp & Timber Company's unbleached sulphite pulp mill at Bellingham, Washington, produced at the rate of 455 tons per day in September, according to data released by the company, and at the rate of 378 tons per day for the first nine months of 1941. The nine months' average is lower than the September average as the first new producing units did not go into production utnil April and the last until early in August (See the July, 1941 issue of PACIFIC PULP & PAPER INDUSTRY). From September on the average daily production will be 455 tons or higher.

The company not only reported increases in production but also in sales and net profits. Net profit after Federal tax provisions for the first nine months was $883,926, compared with $770,250 in the similar 1940 period. The company states that comparative figures for 1940 have been revised since original publication to give effect to an increase in tax provisions to 45.53 per cent of earnings.

After preferred dividends, the nine months' net available to the common stock was $2.55 a share, compared with $2.02 in the 1940 period.

Puget Sound's production of unbleached sulphite pulp in the first nine months totaled 101,983 tons, compared with 98,886 tons a year ago. Average daily output of 378 tons compared with 367 tons daily average in 1940. Net sales for nine months were $5,935,862 compared with $4,610,804 in 1940. Operating profit before Federal tax provisions was $2,209,812, compared with $1,414,081, and provision for Federal taxes amounted to $1,325,886, or more than double last year's nine month provision of $643,831.

Results in the third quarter of 1941 and comparative figures were:

Net sales, third quarter, 1941, $2,276,426; third quarter, 1940, $1,694,530; second quarter, 1941, $2,058,768. Operating profit before Federal tax provisions, third quarter, 1941, $764,053; third quarter, 1940, $626,021; second quarter, 1941, $787,907. Net profit after tax provisions, third quarter, 1941, $305,621; third quarter, 1940, $340,994; second quarter, 1941, $315,164.

As the Puget Sound Pulp & Timber Co. manufactures unbleached sulphite pulp exclusively, it is not affected by shortage of chlorine as a bleaching agent; the company is not encountering any shortage in its principal raw materials, pulpwood, sulphur and limerock. Most of the company's plant is new and all of it has been put in a first class state of repair, eliminating any near-threat of shortage in parts or materials for repairs or replacements.

A record fourth quarter is forecast in the report, this being the first such period in which production will show the full effect of newly installed equipment.

The Unbalanced Pulp Budget

● The following data on the paper pulp situation was included in the informal nine months' report of the Puget Sound Pulp & Timber Company to its stockholders.

"Figures now available for the first seven months of 1941 indicate the extent to which the nation's wood pulp budget is out of balance. They reveal:

"Domestic pulp production at an all time high record:

"Imports below last year, but with increases shown in recent months:

"Exports, which started the year higher than in 1940, substantially below last year in comparable recent months:

"Consumption at all time record levels, running ahead of total new supply, causing continued drain on reverse supplies.

"Domestic produtcion of paper grades of sulphite and sulphate pulps reached 4,000,000 tons and imports amounted to 427,000 tons, making total new supply 4,427,000 tons for the first seven months in 1941. Of this amount 182,000 tons were exported, leaving 4,245,000 tons available for domestic consumption. During the period inventories were depleted by 165,000 tons, making apparent consumption 4,410,000 tons in the seven months (See Figure I).

"Compared with the first seven months of last year, domestic production of paper grades of sulphite and sulphate pulps showed a gain of 596,000 tons. Imports, however, declined 244,000 tons, making a net increase in new supply of 352,000 tons. Exports were 19,000 tons less than last year; thus the amount available for domestic consumption increased 371,000 tons.

"Inventory figures are available only back to April 1, 1940. In the four months, April through July, 1941, apparent consumption, consisting of new supply available for domestic consumption plus inventory withdrawals, increased 228,000 tons over the corresponding months of 1940.

"Critical aspect of the situation is the way pulp inventories are being depleted (50 per cent since April 1, 1940) to meet consumption demands, lending credence to a recently published warning of a paper rationing system, possibly by the first of the year (See Figure II).

"Possibly forecasting an ultimate balancing of the pulp budget, new supply of sulphite and sulphate paper grades available for domestic consumption (consisting of domestic production and imports less exports) increased 402,000 tons, while the increase in apparent consumption was only 228,000 tons in the four months ended July, 1941.

"However, as month to month changes do not seem to follow any uniform pattern, indicated trends are subject to sudden change. Imports, which add to new domestic supply, were rising from April, but showed a sharp drop in July. Exports declined in May and June, drawing less on total new supply, but rose sharply in July (See Figure III).

"Production of unbleached sulphite pulp by domestic mills in the seven months ended July, 1941, is estimated

Figure I

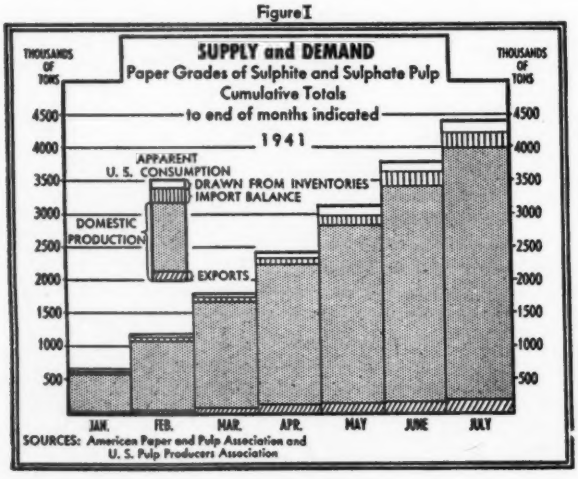


Figure III

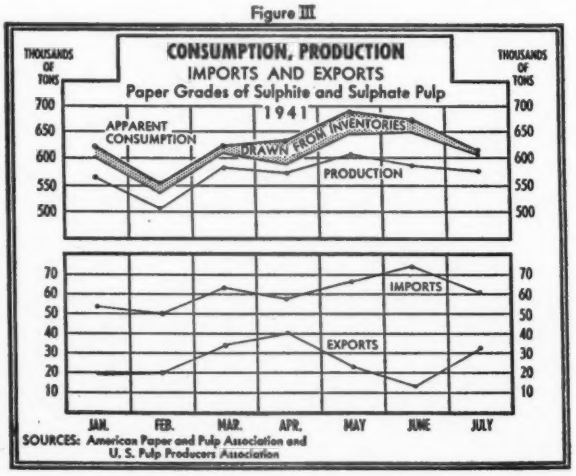
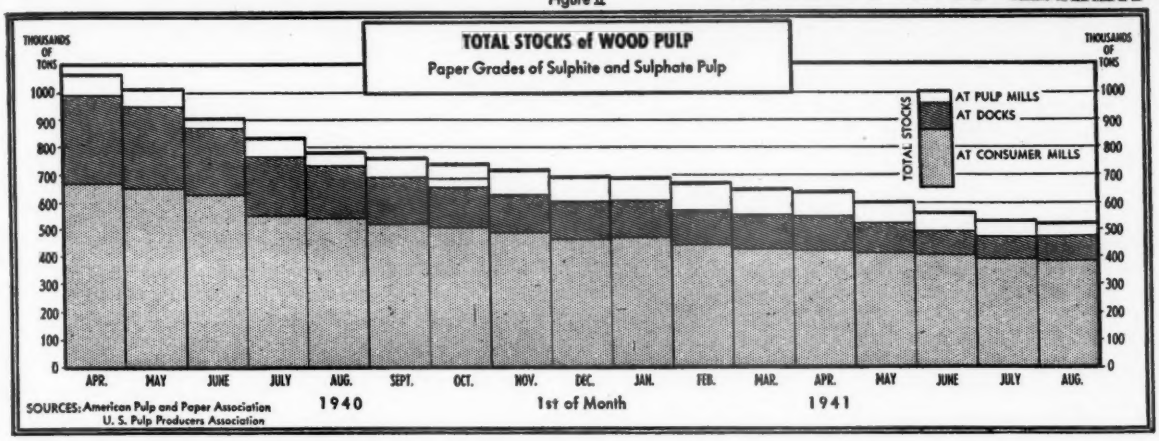


Figure II



at 650,000 tons. Imports arriving during this period amounted to 173,000 tons, creating total new supply of 823,000 tons. Exports were 44,000 tons, leaving 779,000 tons of new supply for domestic consumption. Inventory stocks were depleted an estimated 67,000 tons during these seven months, making apparent consumption of unbleached sulphite 846,000 tons for the period.

"From April 1, 1940, to August 1, 1941, reserve stocks of unbleached sulphite at docks, pulp and consuming mills were reduced an estimated 186,000 tons, or from 430,000 to 244,000 tons.

"Although production of all chemical grades of wood pulp has been at near-capacity all through 1941 (monthly changes largely accounted for by difference in number of working days), greater production is expected in the last half of 1941 than in the first half, due to new capacity at the company's Bellingham mill and at other mills commencing operations in the year's closing months. It appears, however, that consumption will continue for some time to outrun new supply, necessitating further withdrawals from already low reserve stocks."

(Note: Complete data are available only with reference to paper grades of sulphite and sulphate pulps. They, however, comprise the bulk of chemical pulps, and there is no shortage present or threatened in other grades; hence it is believed that paper grade pulp figures adequately present the national situation.)

Leonard McMaster To Represent Supply Accounts

Will handle three of the late Walter Hodges' accounts—Asten-Hill, Orr Felt and American Wringer.

● Leonard McMaster, assistant to the president of the Asten-Hill Manufacturing Company of Philadelphia, Pa., resigned on October 30th and moved to Portland, Oregon, to represent three of the accounts handled for many years by his friend and business associate, the late Walter S. Hodges.

Mr. and Mrs. McMaster arrived in Portland, November 10th and are making their home temporarily at the Hotel Multnomah. Mr. McMaster is retaining Mr. Hodges' former office in the Pacific Building.

As of November 1st Mr. McMaster became the Pacific Coast representative for the Asten asbestos dryer felts, manufactured by Asten-Hill of Philadelphia; the Orr felts, made by the Orr Felt & Blanket Company of Piqua, Ohio; and the rubber rolls produced by the American Wringer Company of Woonsocket, Rhode Island.

Mr. McMaster is experienced in selling with a record of twenty-five years of sales work broken only by his two and a half years with the American Expeditionary Force in France and Germany during the last war as a member of Company D, 16th Infantry, 1st Division.

His first sales work was with the Pillsbury Flour Mills of Minneapolis for whom he did special selling prior to his war service. Upon his return to the United States after the war, Mr. McMaster went with the Gilmer Belting Company of Philadelphia in their sales department. From there he transferred to the Gandy Belting Company of Baltimore, Maryland, with whom he remained for a number of years. From Baltimore Mr. McMaster moved to Philadelphia to become associated with Asten-Hill on October 30, 1932.

During the nine years he was with Asten-Hill his sales work took him to almost every mill on the North American continent. He is especially well acquainted with the men in the Pacific Coast mills for during this nine-year period, he made approximately twenty trips to this region, spending from six to eight weeks each time calling on the plants with Walter Hodges. Putting it another way, he has spent more than two and a half years on the Pacific Coast out of the last nine.

LEONARD McMASTER, Representing Supply Lines on Pacific Coast

Puget Sound Interests Complete Large Timber Purchase

● Men connected with the Puget Sound Pulp & Timber Company of Bellingham, Washington, largest producer of unbleached sulphite pulp, have just completed the largest timber purchase ever made in British Columbia, according to a Canadian Press dispatch on November 13th. The dispatch appears below in full:

"The biggest timber deal in the history of British Columbia, involving the purchase by American interests of a six-billion-foot tract of virgin timber on northern Vancouver Island, was announced today by Fred Brown, head of the B. and K. Logging Company.

Brown said the deal is partly complete and some four billion feet of timber near Beach Cove on northern Vancouver Island already has been taken over by the purchasers, headed by Ossian Anderson of Everett, Wash., president of the Puget Sound Pulp and Timber Company.

Last Big Stand

"The remainder of the timber, all of which comprises the last big stand of virgin forest on Vancouver Island, will be taken over by November 20. The lumber executive said steps will be taken at once for logging part of the area and the logs, mostly Douglas Fir, will be sold on the open market in Canada, principally to sawmills.

"Brown did not reveal the exact amount involved in the deal, but said it would be more than twelve million dollars.

"The deal also included a change of ownership in the Canadian Forest Products Limited, formerly a subsidiary of the International Harvester Company of Chicago.

New Officers Listed

"The deal includes timber stands, sawmill and logging equipment of Wood and English, Limited, at Englewood, B. C., and Timber Investments, Limited, of Seattle, as well as forest tracts owned by the International Harvester Company through the Canadian Forest Products Company.

"Brown announced that the new officers of the Canadian Forest Products Company included Fred Stevenot of San Francisco, chairman and director; Ossian Anderson, Everett, Wash., president and director; Walter DeLong, Bellingham, vice president and director; Fred Brown, Vancouver, vice president and director; Lawson Turcotte, secretary-treasurer and director, and Frank Arnt, assistant secretary-treasurer.

"The new owners of the Canadian Forest Products Company have selected Brown, F. W. Kirkland and J. Fraser, all of Vancouver, to manage the operations."

Mr. Stevenot is a director of the Puget Sound Pulp & Timber Company, and also of the Bank of America Company of which he was formerly president. Walter De Long is operating manager for the Puget Sound Pulp & Timber Company at Bellingham and Lawson Turcotte is secretary-treasurer.

Puget Sound Adding Flat Screens

● The Puget Sound Pulp & Timber Company of Bellingham, producers of unbleached sulphite pulp, are completing a steel, concrete and brick two-story, 16 by 96-foot addition to their screen room.

In the new part will be installed 8 IMPCO bronze vat, Dunbar drive flat screens, similar to the 40 already in service at Puget Sound. The new ones are divided into two lines of four screens each and will be used as primaries. The screens arrived in Bellingham November 8th and it is expected they will be operating by December 1st.

The company purchased them through Kenneth B. Hall of Portland, Pacific Coast representative of the Improved Paper Machinery Corporation of Nashua, N. H.

Fraser Men Come West to Visit

● Frank O. White and William Ketchen of the Fraser Companies, Limited, Edmundston, N. B., visited pulp mills in Washington the latter part of October.

Mr. White is chief engineer and Mr. Ketchen is technical director of Fraser, which operates pulp and paper mills in Madawaska, Maine, and across the St. John River at Edmundston, New Brunswick.

Stock Preparation Theme of December 11th Meeting

● "Stock Preparation" will be the subject discussed at the December 11th meeting of Papermakers and Associates of Southern California in Los Angeles, according to Richard Buckley, chairman of the meeting and chief chemist of the Fernstrom Paper Mills, Pomona, California.

Edward M. Root, sales engineer, Dilts Machine Works, Division of the Black-Clawson Company, Fulton, N. Y., will present a paper on the subject and lead the discussion.

Mr. Root will also attend the meeting of the Pacific Coast Division of the Superintendents in Seattle, December 5th and 6th.

Pulp and Paper Mill Men Participate in Personnel Conference

● One of the featured speakers at the third annual conference of the Pacific Northwest Personnel Management Association, held in Seattle, October 22, 23, and 24, 1941, was Alexander R. Heron, director of industrial relations of Crown Zellerbach Corporation and Rayonier Incorporated. The title of Mr. Heron's address was "Post-War Problems in Personnel."

John W. Bagwill, personnel and safety supervisor, Rayonier Incorporated, Hoquiam, Washington, was also on the program. The subject of his talk was "Induction of New Employees."

Other representatives of the pulp and paper industry in attendance at the conference were as follows: O. R. Hartwig, Crown Zellerbach Corporation and Rayonier Incorporated, Portland, Oregon; J. M. Tedford, Crown Zellerbach Corporation, Camas, Washington; S. W. Grimes, Rayonier Incorporated, Port Angeles, Washington; R. H. Williams, Crown Zellerbach Corporation and Rayonier Incorporated, Portland, Oregon; W. C. Crait, Rayonier Incorporated, Shelton, Washington; R. E. B. Wood, Weyerhaeuser Timber Company, Pulp Division, Everett, Washington; L. O. Reisinger, St. Regis Paper Company, Tacoma, Washington, and George H. McGregor, Pulp Division, Weyerhaeuser Timber Company, Longview.

Myron Black Makes Coast Trip

● Myron Black, sulphite superintendent and technical director of the Inland Empire Paper Company, Millwood, Washington, visited a number of Puget Sound and Columbia River mills the latter part of October.

Mr. Black is a past chairman of the Pacific Section of TAPPI.

Bowater's Men Look Over Coast Mills

● Jerry Penny, mill superintendent, and Lyle Lang, sulphite superintendent of Bowater's Newfoundland Pulp & Paper Mills, Ltd., Cornerbrook, N. F., arrived in Washington November 11th for a stay of a few days. They planned to see a number of Pacific Northwest pulp and paper mills before returning to Cornerbrook.

Inland Empire Installs New Equipment

● The Inland Empire Paper Company of Millwood, Washington, manufacturers of newsprint and groundwood and sulphite specialty papers, is improving production facilities this Fall through the installatiton of several new pieces of equipment.

On October 4th a suction couch roll and a rubber covered suction press roll were installed on No. 2 newsprint machine which has a wire width of 154 inches. The machine was down 72 hours for the change-over. The rolls were supplied by the Rice, Barton Corporation of Worcester, Massachusetts, through their Pacific Coast representative, Ray Smythe of Portland.

A suction couch roll was installed on No. 4 paper machine in October and two 14-plate Smythe bronze vat flat screens were placed in operation in September on sulphite pulp. Inland Empire now has nine Smythe flat screens, purchased from Ray Smythe of Portland.

On order is an overlapping take delivery and layboy for the mill's Hamblet sheet cutter.

How Raw Materials Allocations Will Work

● A clear cut explanation of how the proposed new system of allocating raw materials is expected to work, appeared in the Pacific Coast Edition of the Wall Street Journal for November 10th. Because of the importance of the anticipated changes to the pulp and paper industry, the explanation is reprinted here in full.

"Machinery for Government control of all raw materials and all industrial production will have to be set up for the effective operation of the new allocations system announced last week-end by the Supply, Priorities & Allocations Board.

"The allocations system, outlined by SPAB, necessarily will require such control.

"That the new program cannot be put into completely effective operation for many months because of the comprehensive volume of information necessary for its enforcement, however, was the consensus of leading authorities last week-end. It may be applied in specific cases, though. Farm equipment is to be used for the first application, officials said.

"The priorities system will continue in force, subject to changes in details, as the allocations system is enlarged.

How System Would Work

"This is how the system would work: A so-called end products division in the OPM would handle all the raw material going into the making of a product. If it happened to be the farm equipment industry, the OPM branch handling that product would work out production quotas and clear through the different raw material branches the amounts of brass, steel, rubber, etc., that will be necessary to fill the quotas.

"Other products would receive similar treatment based on the amount of available supplies. Military requirements would come first, but the supplies held for military orders now would have to be included in the over-all pool from which all raw material distribution is made.

"The system would require more information from the Army and Navy on inventories of materials than has ever before been called for or received by the civilian defense planners.

"The final check on a given product is SPAB itself.

"Officials believe the allocations system will benefit producers in both defense and non-defense because there will be tighter control over supplies and production. Recently, steel products were put on an allocation basis because the War and Navy departments reported to SPAB they were unable to get specific types without some delays in defense production.

Will Impart Greater Certainty

"SPAB said in its announcement that as the program "gradually emerges" it will give greater certainty to American business and industry, and it will mean that defense officials will have a clear over-all picture of the nation's total requirements for raw materials. SPAB already has authorized Executive Director Donald Nelson to get detailed requirements statements from the armed forces, the merchant ship program and lend-lease.

"SPAB uses plumbing equipment in illustrating the operation of the system. A program for manufacturers of this equipment would originate in the plumbing and heating branch of the Division of Civilian Supply. It would be worked up in consultation with the industry and cross-checked to see how the military requirements situation might effect it. Then, when it has been put in shape, it would be referred to the various raw materials groups—the iron and steel branch, the copper branch, etc.—for final checking.

"Each program will be initiated by the group which is responsible for the end production with the raw materials groups coming into the picture in an advisory capacity.

Will Provide for Changes

"As all programs must of necessity be decreased or increased as armament production rises, each one will be framed so that it can be modified upward or downward in case of need. When a program has been drawn up, it will be reviewed carefully in order to cut down the use of critical materials to the greatest possible extent through simplification of lines, substitution and so on. The OPM bureau of industrial conservation will work with and through the industrial branches to accomplish this.

"When the program drawn up along these lines has been agreed upon by the branches involved, it will be presented to the executive director of SPAB in order that it may be properly synchronized with other programs.

"It is then presented to SPAB. After SPAB has passed on a program, it is referred to the OPM Priorities division which undertakes to make it effective and where possible to make sure that the needed quantities of goods will be available through the issuance of the required priorities ratings or through allocation of materials.

New Routing System

"In order that current operations may dovetail properly into the whole broad project, OPM's administrative order devised a new routing system for the handling of PD-1 preference rating applications, effective on December 1. Under this new order, applications for materials will clear through the industrial branches (end product branches) responsible for the particular industry. The industrial branch will then go to the branches handling the materials needed for the manufacturer. At present, PD-1 applications go to the materials branches.

"In setting its sights for this all-out program, SPAB laid down the principle that where feasible the allocation programs would be developed in such a way that minimum quantities of needed materials would be assured to essential industries whose operations are curtailed.

"SPAB announced it had authorized Executive Director Nelson to request OPM to obtain detailed production figures, industry by industry, for 1942. OPM has already embarked on this information program.

"SPAB stipulated that these programs should contain ample information to indicate the month-by-month requirements of critical materials needed for production of military, industrial and civilian items and essential public services. It also directed that these programs should show similar requirements for repair parts and capital expenditures."

"Defense" Defined By OPM

● In the interest of clarifying the term "Defense" as defined by the Office of Production Management, the Sulphite Paper Manufacturers Association has released the following in answer to inquiries as to just what is covered by the term "Defense," particularly as it refers to orders placed with the industry. The November issue of the Zellerbach Paper Company's "Informant" carried the definition as released.

"1. Any contract or order for material or equipment to be delivered to, or for the account of:

(a) The Army or Navy of the United States, the United States Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority, the National Advisory Commission for Aeronautics, the Office of Scientific Research and Development;

(b) The Government of Great Britain and the Government of any other country whose defense the President deems vital to the defense of the United States under the Act of March 11, 1941, entitled 'An Act to Promote the Defense of the United States.'

"2. Any other contract or order to which the Director of Priorities assigns a preference rating of A-10 or higher (Such ratings will be assigned only to contracts or orders which the Director of Priorities shall deem necessary or appropriate to promote the defense of the United States).

"3. Any contract or order placed or offered by any person for the delivery of any material or equipment needed by him to fulfill his contracts or orders on hand, which material or equipment is required for the fulfillment of any contracts or orders included under 1. and 2. above."

Bill Herb a Father The Sixth Time

F. J. "Bill" Herb, manager of the Pacific Coast Paper Mills of Washington, Bellingham, passed cigars for the sixth time October 14th in honor of a baby daughter, Katherine, who makes the fifth daughter in the Herb family.

When Mrs. Herb went to St. Joseph's Hospital in Bellingham, Mr. Herb accompanied her and underwent an abdominal operation. Upon coming out from under the anaesthetic he reached for the telephone and called his wife down the hall to learn whether the good news was a girl or a boy. Mother, father and baby are doing nicely.

Influence of Wood Characteristics On Pulp Quality

by C. A. ANDERSON*

MUCH of the pulp wood available in the Pacific Northwest is first growth timber that has reached maturity. The per cent of sap wood is low, the heartwood is old and punky, and fungus growth is heavy and vigorous. Yes, it is true that the timber in the Pacific Northwest is big and there is a lot of it, but it does contain much decadence, many growth characteristics and varying density.

Many Easterners, when they see the size and quantity of pulp wood available, express the desire that they too would like to have that kind of wood to use; and many of us, after looking at some of the wood available, would be pleased to let them have some of it.

Decay, Growth and Density, three elements that probably introduce many variables into the sulphate and sulphite processes. We will go into a brief description of each.

Decay

● There are two types of fungi accounting for a large majority of the decadence in Western pulp woods. They are in the class Basidiomycetes and are designated as Fomes pini and Echinondontium tinctorium—the former from the genera Hydnaceae and the latter from the genera Polyporaceae.

Echinondontium tinctorium is the more vigorous of the two insofar as pulpwood is concerned. This fungus is found principally in Hemlock and the Balsam Firs, Douglas Fir, and a few other conifer species.

Fomes pini is found in nearly all of the conifer species and is the most destructive of all fungi because of its wide distribution. They are both commonly called red ring rot and are hard to distinguish in the incipient stage. In the advance stage, however, they are vastly different in character.

One (E. tinctorium) is considered a cellulose destroying fungus, while the other (F. pini) is considered a lignin destroying fungus. Each will, of course, destroy the entire heart wood of a tree eventually, but in their incipient and developing stages they generally follow the pattern as given above.

*Technical Department, Crown Willamette Paper Co., Division of Crown Zellerbach Corporation, Camas, Washington. Presented in competition for the Shibley Award at the Dinner Meeting sponsored by the Pacific Section of TAPPI, Camas, Washington, November 4, 1941.

In order to expedite discussion of decayed wood, it will be divided into three classes: INCIPIENT, INTERMEDIATE, AND ADVANCE DECAY.

INCIPIENT decay is the period following infection when the mycelium is spreading through the heart wood, but hasn't begun to disintegrate the woody structure.

INTERMEDIATE decay is the period in which the mycelium has branched out and the Thallus has begun the process of wood disintegration.

ADVANCE decay is the final stage of wood disintegration. When decay has reached this stage the woody structure is almost beyond recovery.

In discussing the influence of decay on pulp quality, reference will be made only to the fungus E. tinctorium, since all data available was developed on wood infected with this species.

Growth

● Growth characteristics of a tree will vary according to the area, elevation, site and climate in which it grows.

Each one imparts a characteristic to a tree that makes it differ from one grown in another site and under different conditions. Spring wood and Summer wood growth are considered here to be important, and hereinafter when reference is made to growth characteristics it will concern these two.

Spring and Summer wood cells will more or less reflect the conditions under which the tree grew. However, the type of growth for a given area will be approximately the same, and if used for pulp better results are obtained when using wood from one area in a group rather than mixing woods from several areas. This fact was established in a mill scale experimental run in 1939.

Spring wood cells are normally thin walled. Penetration in the cooking process is good; color is good; strength is good; but the tear test is low and the pulp beats down fast. Summer wood cells are almost opposite in character. Cell walls are thick; penetration in the cooking process is slow; color is lower; and strength is lower. The tear test is very good and the pulp beats down slowly. Any cell growth similar to the above, i.e., thin wall cells or thick wall cells, Spring or Summer wood growth will react the same as that given above when reduced to pulp.

Growth characteristics affect pulp quality in another way — DIRT COUNT. In the mill test run it was found that the dirt counts were affected by the growth characteristics of the logs used.

Density

● Density of wood is expressed in specific gravity and pounds per cubic foot. We will refer to it as density expressed in pounds per cubic foot, green volume. Wood density is affected by the growth and the amount of decay present. For that reason the exact effect density has on pulp quality is a matter of opinion. The possible yield of pulp obtainable from any given volume of wood is, of course, dependent upon the density of the wood. One observation made on the effect density has on pulp quality is that a high density wood produces pulp with a good tear test, while low density wood produces pulp with a lower tear test. The tear test generally does not vary as much as the wood density, however. The incipient stage of decay does not, as a rule, affect wood density. Intermediate and Advance decay lower density in proportion to the amount of each present in the wood.

DECAY, GROWTH AND DENSITY. Control of these three elements is beyond our realm. As all trees grow, nature wields its power over the process and we use the product for pulp. The wood is there for us to use, and it should not be wasted because of its many defects.

In the Sulphate and Sulphite processes, three important variables are always present—TIME, TEMPERATURE AND CONCENTRATION. To this we add a fourth variable—WOOD. Now let us see what happens with this fourth variable added.

Effects of Decay on Pulp Quality

● In the sulphite process the most noticeable change in pulp quality in the transition from incipient to ad-

vance decay is the pulp color. Normally, incipient decay will not affect pulp color, but the drop in color from the incipient stage to the intermediate stage is quite pronounced, and the color drop from the intermediate stage to the advance stage is much less.

The following colors were obtained from the three grades of decayed wood (Table I).

In the the case of the experimental cooks the figure given for incipient decay represented the color of sound wood in the original tests. It is included here as representative of incipient decay for two reasons: First, we have not been able to detect any loss in color from sound wood to the first stage of wood decay; Secondly, in the last two years of our wood grading program at Camas, we have found less than thirty per cent sound wood free from incipient stages of decay.

In the case of the actual mill trial run tests, we note that the transition from incipient to advance decay is more evenly divided between each stage. The reason for this is that the experimental samples were hand picked to represent each stage accurately, while in the mill scale run the logs were grouped into rafts containing a majority of each. In this way the rafts contained much good wood as well as decayed wood.

From these color tests we can see that once decay has passed the incipient stage, wood degradation is very rapid insofar as pulp color quality is concerned.

Kraft pulp color is not affected very much by wood decay except in the advance decay stage when a slight darkening of pulp occurs.

In the cooking process, there is a noticeable increase in chemical usage. With the time, temperature, and concentration cycle remaining constant, the transition from incipient decay to advance decay is noticeable in the increased hardness of the pulp. This is true in either the sulphite or sulphate process.

The experimental sulphite cooking data shows this in the increased Wiles Bleachability tests—9.8 for Incipient; 11.0 for Intermediate; and 12.1 for Advance Stage. During these tests the Combined SO_2 depletion in each cook was uniform. This indicates that a change would be necessary in either time or temperature to cook decayed wood to a uniform hardness.

During the mill scale trial, the effect of decay on pulp hardness is shown in another way:

The wood was all cooked to a uniform Wiles Bleachability. As the decay increased, the time required to reduce the wood to pulp increased (Table II).

The bleachability of the first two are alike, while the advance decay sample was harder. Looking at the data, we see that the intermediate decay required a forty-one minute longer cooking time and a lower blow back test to get the same Wiles Number as that obtained from incipient decayed wood. The cooking of advance decayed wood was not completed as is shown by the higher Wiles Number.

There is no experimental data on decayed wood in the kraft process. In the mill test run, decay affected this process almost the same way in regard to pulp hardness. Wiles Number for incipient decay was 16.2; intermediate decay 20.9; and advance decay 20.9. During the time this test was in progress, the kraft mill had to increase the digester charge each time the amount of decayed wood increased. Even with the increased chemical usage the hardness of the pulp was higher for the second and third stages of decay. This indicates decayed wood is harder to pulp in the kraft process.

The mullen strength of pulp produced from the three stages of decay indicate the degree of fibre degradation that has taken place. The experimental sulphite tests showed mullen strength of 167 for incipients; 150 for intermediate; and 149 for advance. These tests indicate that fibre degradation is greatest during the period between incipient and intermediate stages of decay. In the mill test run the mullen tests for each was incipient 151; intermediate 145; and advance 139. Tear tests on the pulp show a little different trend—tests taken at maximum mullen (Table III).

Note that for some reason the tear tests on pulp from intermediate decayed wood are the highest. There is a possibility that intermediate decay degrades fibre to the point where the sheet forming qualities were imparied, but still retained all of the fibre strength.

Decay vs. Lignin Content

● We mentioned earlier in this report that E. tinctorium was principally a cellulose destroying fungus. Lignin tests on pulp from the experimental cooks show per cent lignin content on incipient decay 2.71 per cent; intermediate decay 4.74 per cent; and advance decay 5.68 per cent.

Effects of Growth Characteristics On Pulp Quality

● In discussing growth characteristics here we are referring to Spring and Summer wood growth. Samples of wood were taken from the rafts of logs supplied to us by the several vendors in this area for the purpose of determining if possible what effect growth characteristics had on pulp quality: These samples were cooked in stainless steel baskets suspended in No. 4 and No. 9 Sulphite Digesters at Camas. The Kraft samples were cooked in a small stainless steel autoclave.

It became apparent after a few tests with the sulphite process that any differences in growth characteristics other than Spring and Summer wood would not be easily identified. The majority of the tests were run with the purpose in mind of establishing the variation in pulp quality due to the differences in Spring and Summer wood growth.

Results of tests made in the baskets in the Sulphite Mill are given in Table IV.

Table I

	Incipient	Intermediate	Advance
Experimental Cooks	56.8	34.1	30.4
Actual Mill Trial Run	55.7	50.1	47.7

G. E. Reflection Meter—No. 1 Filter)

Table II

Unbleached Sulphite:	Blow Back	Dump Test	Time	Wiles Bleachability
Incipient	.610	.38	9:02	6.87
Intermediate	.565	.34	9:43	6.82
Advance	.560	.34	9:38	7.38

Table III

	Experimental	Mill Test Run
Incipient	0.96	1.03%
Intermediate	1.06	1.23
Advance	0.86	1.00

The figures shown are an average of four tests on each. Three of the tests in series one checked, while the fourth was lower in all three factors. In series two the four tests checked fairly good.

The autoclave tests failed to show any difference in pulp quality. This may have been due to the selective action of the liquor on the small samples used.

The affect of growth characteristics on dirt counts in a pulp will depend, to some extent, on the degree of cleaning the wood gets in the wood room. Unless the logs are cut into narrow cants, much hidden dirt is carried into the pulp system.

Smooth bole logs as a general rule contain many black knots. These knots, unless removed, appear in the sulphite pulp as dark specks composed mainly of bark. This is the bark that was left on the limb when it was shaded out and covered by the subsequent tree growth. The pulp, however, is comparatively clean. Black knot dirt carries through the bleaching process almost intact.

In the kraft process smooth bole logs normally result in cleaner appearing pulp than rough logs.

Logs with growing knots on the surface, especially those with medium size knots, nearly all go through the wood room with the knots intact. When the wood is reduced to sulphite pulp the major part of the knot is uncooked and that part that is cooked is harsh and shivey-looking, thus appearing as part of the pulp dirt count. Pulp dirt counts are quite high when that type of log is used.

In the kraft process, the pulp produced from this type of log is normally the dirtiest because of the high shive content.

Rough logs, due to abnormal growth contain bark seams, burls, and other growth defects. This type of log is the hardest to handle in the wood room. Quality of pulp from this type of wood is the lowest. Dirt counts are always high because many of the bark seams are hidden and in a normal process of wood cleaning pass on to the digester intact. The abnormal growth area in this type of wood increase the shive count of pulp. The sulphite and kraft processes are affected about the same with this type of wood.

Table V shows the segregation of dirt in sample sheets into five groups. The figures are in per cent of total sheet dirt. The Standard TAPPI Dirt counts are also included.

Conclusion

● Wood quality work should be an integral part of every pulping process. Wood is one of the most important raw materials used and one that generally receives the least amount of attention. Variation in wood quality has the same effect on continuity of operation as variation in sulphur, limerock, lime or salt cake.

The chemical process cannot cook properties into the pulp that are not inherent in the wood itself.

All wood, regardless of growth characteristics, can be used in most pulp and paper mills, if the manner in which it is used is so developed that quality remains uniform, and in so doing the effects of growth characteristics on pulp quality can be reduced to a minimum.

Table IV

	% Summer Wood	Max'm Mullen	Tear at Max'm Mullen	G.E. Color
1.	21%	164	1.14	53.3
2	31%	156	1.22	52.6

Density of No. 1—24.0 lbs. per cu. ft.
Density of No. 2—25.6 lbs. per cu. ft.
(Amount of Summer wood shown, balance of lot Spring wood)

Table V

Unbleached Sulphite

	Rosin	Shives	Bark	Knots	Misc.	No. of Specks
Smooth	63.5%	9.8%	19.5%	2.3%	4.9%	85
Knotty	29.8	59.5	5.4	2.3	3.0	74
Rough	56.3	18.8	11.8	5.9	7.2	82

Standard TAPPI Dirt Counts

Smooth	Knotty	Rough
150	150	180

The chart shows the sheet dirt distribution between the three types of logs.

Paper Milk Bottle Gaining Steadily

● The paper milk container continues to gain in popularity on its merits. The EX-CELL-O Corporation of Detroit, manufacturers of the "Pure-Pak" container and the machine which forms, fills and seals it, announces that the American Association of Medical Milk Commissions has approved the Pure-Pak container.

This group of doctors, interested in the production and distribution of pure, wholesome milk have approved the Pure-Pak for the distribution of certified milk.

Industrial safety engineers have awakened to the potential danger of serving milk in glass bottles to employees as the result of accidents caused by the empty bottles lying around the plants. Always seeking ways of reducing accidents these engineers have installed Pure-Pak milk containers in a long and growing list of major industrial plants throughout the nation, thereby eliminating the hazard of the glass bottle.

Two-quart Pure-Pak paper milk containers are becoming popular. They are more economical than the single quart sizes and cut the necessary trips to the store in half.

The Lucerne Cream & Butter Company of Los Angeles introduced the two-quart Pure-Paks early this year. It was done without fanfare. Two-quart containers were simply placed in the store refrigerators alongside the single quart containers. The housewives did the rest. In glass two quarts would be too heavy to carry home along with other purchases, but the lightweight Pure-Pak containers have made it almost as easy to take home two quarts as one.

The Lucerne Cream & Butter Company now has ten Pure-Pak machines operating in Los Angeles, Oakland and Washington, D. C.

Glass milk bottles wander all over the country causing losses to the original dairy owners. And it is claimed that they frequently carry disease germs from one town to another which may be transmitted to human systems if the bottles are improperly washed. In the column, "Strolling Around the Town," appearing in the Seattle Times for November 11th, was this item:

"Mrs. Walt Daubert, Route 2, Box 892, Renton (Washington), begs to report that she has a pint milk bottle from Brooklyn, N. Y., and a quart bottle from Buffalo, N. Y., and anyone interested may find out about acquisition of same by addressing her as above."

Paul Freydig Returns From Tasmania

● Paul E. Freydig, well-known Pacific Northwest logging manager, recently returned to the United States after more than a year spent with the Australian Newsprint Mills, Proprietary, Ltd., of Hobart, Tasmania. Mr. Freydig established a system for logging the large eucalyptus trees employed in producing the first newsprint made in Australasia. His work there completed, Mr. Freydig joined the logging department of the Union Lumber Company at Fort Bragg, California.

At the Fall meeting of the Society of American Foresters in Portland, October 27th, Mr. Freydig was the principal speaker.

Army Affecting Economies In Paper Buying

● In the procurement of paper and paper products for the Army, the Quartermaster Corps not only has spread its orders among many more firms than previously had taken part in the National Defense Program, but also has affected substantial savings, the War Department announced November 3rd.

For the present fiscal year, savings of more than $1,000,000 are expected to be made.

As an example, in the procurement of duplicating stencils, former specifications restricted the number of potential producers of this product. New specifications, based upon scientific tests made by the United States Bureau of Standards, greatly increased the number of mills able to produce this product and for a lower cost which made possible savings of about $250,00 for six months' supply.

In the production of mimeograph paper more than 40 small paper plants which had been unable to take any part in the former procurement program are now at work on Army orders. Early this year, the grade of mimeograph paper being procured cost about 41 cents per ream. The Quartermaster Corps developed specifications which permitted the use of ground wood pulp in its manufacture. This opened the procurement field to many more firms that could provide the new paper for about 25 cents per ream, a saving of about $1,000 per carloard.

Another paper product for which substantial savings have been made by the Quartermaster Corps is material used for file folders. Former specifications for this product were such that only mills producing high quality food containers and similar products could meet them. Demand was so great in this field that prices jumped from 50 cents to $1.15 per thousand during the first half of this year.

By changing the specifications to permit the use of ground wood pulp, more mills were able to take an active part in the program and from 25 to 50 million folders are now being produced at an average cost of about 65 cents per thousand.

A new development in the spread-work program has been the elimination of definite specifications for certain paper products. Potential producers of such items are informed of the general qualifications required and are invited to send samples to the Quartermaster Corps. These are tested and if satisfactory the producer is eligible to submit bids for future procurements.

Consolidated Paper Men Visit Coast Mills

● Four key men of the Consolidated Paper Corporation, Limited, of Montreal, Canada, left on an extended business trip October 8th, visiting most of the kraft and sulphite mills of the Pacific Coast. The men making this trip are F. W. Bradshaw, assistant chief engineer, of Laurentide Division, Grand Mere, Quebec; Richard Collins, manager of Wayagamack Division, Three Rivers, Quebec; K. G. Wilen, chief chemist of Wayagamack Division, and Joe Chenevert, sales manager of the kraft division.

Camas Paper School Opens Ninth Term

Now accredited by Oregon State College and the University of Washington.

The Camas Paper School of Crown Zellerbach Corporation, at Camas, Washington, held opening classes for the 1941-42 courses on October 21. According to Dean A. G. Natwick, assistant resident manager of the Camas paper mill, the school is going into its ninth year with increased enrollment and with recognition of both the University of Washington and Oregon State College as an "unique advancement in education."

Classes in all phases of pulp and paper making—from forest management to sales—will be held during the eighteen-week school year.

New recognition for the school, and further encouragement for its students, came recently with the announcement by Dr. Frederick M. Hunter, Chancellor of the Oregon State System of Higher Education, that the Camas Paper School had been accredited by that body. Subsequently word was received from Earl G. Mason, acting dean of the School of Forestry at Oregon State College, specifying that credits will be given paper mill students who may later elect to enroll in the department of chemical engineering in the School of Engineering, in the department of wood products in the School of Forestry or in the department of chemistry in the School of Science. Students registering in either of these departments for a year could then transfer to any other department in the state college and have the credits earned at the paper school transferred, along with those earned in residence on the campus.

The paper school was recognized in 1940 by the college of forestry of the University of Washington and Bror L. Grondal, forest products professor of the university, has taken a keen interest in the school's progress.

First-year classes convened October 21, and the third and fourth-year classes the following day. A. G. Natwick continues as dean of the school and resident manager J. E. Hanny and vice-president Albert Bankus as regents.

In addition to the sixteen faculty members, who are mill department heads, several authorities from other industries are lecturing to the classes. These include Professor Bror L. Grondal, University of Washington; E. P. Stamm, logging manager, Crown Willamette Paper Company; Arthur R. Lindsely, technician from West Linn, Oregon; R. S. Hatch, research director of Weyerhaeuser Timber Company; C. F. Gieser, purchasing agent, Crown Willamette Paper Company; W. N. Kelly, manager Longview Mill, Pulp Division Weyerhaeuser Timber Company; R. E. Chase and R. E. Chase Jr. of R. E. Chase and Company; H. H. Richmond, chief engineer, Electric Steel Foundry Company; P. R. Hines, consulting engineer; J. D. Kroeker, construction engineer; Lowell Edwards of Longview Mill, Pulp Division Weyerhaeuser Timber Company; Charles Quentel of C. C. Moore & Company engineers, and Clarence Richen, instructor in the school of forestry, Oregon State College.

C. A. Anderson, wood technologist, has taken Roy R. Miller's place on the faculty for the coming school year. Mr. Miller is now attending the Massachusetts Institute of Technology, as recipient of a coveted Alfred P. Sloan scholarship. It is expected he will rejoin the faculty upon his return.

R. M. Crosby is the new registrar of the paper school, taking the place of W. E. Harms, who resigned to enter the packing business.

A large and complete textbook, "Making Paper," and a full set of Kodachrome motion pictures of the industry will amplify the lectures. Motion pictures on paper testing and bag printing operations have been added this year, and a logging film, "Hemlock Harvest," will be shown.

This 24-minute colored motion picture was taken in the Neah Bay hemlock operations of the Crown Zellerbach Corporation and is accompanied by narration.

Wage Economics New Feature

An added feature of the courses will be lectures to the third and fourth-year classes on "Wage Economics of the Paper Industry," which will portray the history, migrations and other important phases of the subject. These lectures will be given by representatives of the Camas locals of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, and the International Brotherhood of Paper Makers.

Last year the school had an enrollment of 295 students. There are 352 students enrolled for this year's courses. Of these, 136 are first-year students, 112 are second-year, 56 third-year, and 48 are fourth-year students. Eight of the first-year students are women, as are five of the second-year enrollees.

Thirty-two men graduated from the fourth-year class last year.

Simplified Practice Lists Show Much Progress

● A revised list of Simplified Practice Recommendations recently issued by the National Bureau of Standards shows that considerable progress has been made in the standardization of papers and paper products.

Included are glassine bags, grocers bags, and bags used for notions and millinery; binders, box and corrugated boards; composition books; corrugated, solid fiber, folding, and set-up boxes; various paper forms used in commercial transactions; restaurant guest checks; cones and tubes for textile winding; containers for foods and beverages; ice cream cups; asbestos, photographic, and tissue paper; shot shells; tags; and sealing tape.

Copies of the revised list, designated LC-654, can be obtained without charge on request to the Bureau at Washington, D. C.

Printing on Paperboard

by GEORGE F. FORD*

PRINTING is the mechanical process of transforming a thought into visual form.

Whether the printed sheet is of paper or paperboard, the idea is to command attention. One advertiser expresses it a little differently—he describes his work as "emotion promotion."

Now that descritpion may be a little hard to grasp at first, but when we see such examples of printing as the average calendar or bill-board or the like, with its universal display of the feminine form we begin to understand exactly what he means.

Note, for instance, this luscious picture taken from the wall of a mill labororatory.

Now you see why "emotion promotion"—if you want to sell a soft drink, show a bathing beauty in next to nothing—if you sell stockings, a beautiful pair of legs—and, as for bath towels, Oh boy!—let your conscience be your guide.

Now when we come to printing on paperboard, we are not so lucky—Our material does not lend itself to the fine pictorial effects obtained when using paper, so we must confine ourselves to exploiting a brand or product.

However, just as the paper printer can use the feminine form to catch the attention so we use color.

We are in much the same position as Henry Ford in the early days when he offered you your choice of any color so long as it was black. With us the color is red. I know that psychologists have told us that women prefer red and men prefer blue—I almost said blondes—but my experience leads me to believe that men see red most of the time.

Certainly we have learned by bitter experience that when a customer requests something beside the inevitable red carton—we must use a little diplomacy.

We prepare a sketch along the lines suggested by him, then we make a second sketch using red as the predominant color—after the salesman has shown the first sketch and gotten a half-hearted response, he flashes the red design and brings home the order.

Printing on paperboard is divided into two main groups.

1. Cartons.
2. Shipping Cases.

Confining our attention first to cartons we find that paperboard is adptable for use in all types of printing:

1. Intaglio or rotogravure.
2. Silk Screen Process.
3. Planographic or Offset.
4. Relief or Letterpress.

Taking these up in that sequence we have

First, Intaglio or Rotogravure

● This process has been little used largely because of ink odors—odors are out so far as food cartons are concerned.

Recently the Wieble Company has perfected an intaglio press in which the inks are relatively odorless—it's greatest element of interest is that the inks set almost instantly as they touch the paper.

I have seen a sheet printed in three colors, with all the details and tone values of a four or five color letterpress job, or six to eight colors in offset. This press is still in the experimental stage.

Second, Silk Screen Process

● This is used mostly on large window displays—In this process a piece of silk is marked out with the design—all parts of the design not to be printed are blocked out, leaving untreated only the part to be printed. There is a separate piece of silk for each color.

Each piece, held taut in a frame, is placed over a sheet of paperboard and the ink or paint brushed on to the silk—the ink goes through the untreated portion and prints the sheet. This is essentially block printing.

Third, Offset

● This process has been quite thoroughly discussed by Mr. Burroughs, the previous speaker, and so I will not say more than that it is not widely used in paperboard printing. There are only a few carton plants in the country using the offset press.

The principal trouble is the water roll. Paperboard is quite porous and is susceptible to moisture changes. The presence of water in the offset process results in serious difficulty in register both between successive colors and between the printing and cutting operations.

Fourth, Letterpress or Relief Printing

● Here the figures, or subjects to be printed are raised, the ink is applied to the raised surfaces and then brought into contact with the sheet of paperboard.

Since there is no moisture involved, there is no resulting changes in size, either from shrinkage or swelling, and difficulties of register are minimized.

There are two types of letterpresses in use, the rotary and the at bed.

The rotary is so named because it's motions, like those of the offset press are entirely rotary. Several such presses are on the market. One by Claybourne uses a single central impression cylinder, with the plate cylinders spaced about the circumference — Cottrill builds a similar machine—A different design of rotary is built by Babcock very similar to the two or color Wieble flat bed, using two separate impression cylinders with a transfer roll between. In this press the plates are mounted on plate cylinders which contact their corresponding impression cylinders.

On all three of these machines curved plates or electrotypes are used. Better speeds are obtained, usually better than double the production of the conventional flat bed —But there are several offsetting elements. In the first place, curved electros are expensive and difficult to form in register. Claybourne has electrotype curving equipment, but it represents a considerable investment. Furthermore, the storage of curved electros is quite difficult because of the shape and the greater space occupied by the curved plates as compared to the much less space needed for flat plates.

Another disadvantage is in the cost of make ready or setting up time. For those not acquainted with printing operations, make-ready in paperboard printing is the process of positioning the plates on the press. In the case of a flat bed press, the plates are flat and are mounted on flat bases or forms which are then locked into the bed of the machine. The mounting of the plates on the base can be done on a table away from the press so as not to require stoppage of the press. Then when the preceding job is finished,

*Manager, Converting Department, Fibreboard Products Inc., Los Angeles, California. Presented at the Dinner Meeting of Papermakers and Associates of Southern California in Los Angeles, October 2, 1941.

the old form is removed and the new one slipped in. The final careful register and adjustment is then completed, but the lost time on the press has been much reduced by making up the form on the base while the press was still running on the previous job.

This is not possible in the rotary type of press. The plates must be mounted on the press itself during which the machine stands idle—This results in high make-ready costs which can only be counteracted by exceptionally long runs. In a conversation with the manager of a large printing firm in Chicago, who uses both rotary and flat bed equipment, he stated that any job of less than 140,000 impressions was run on the flat beds and over that on the rotaries. The Wieble Company places the breaking point at 100,000 impressions.

As there are not many 140,000 impression carton jobs in existence, there are very few rotary presses in use—which brings us to the flat beds.

This is the press most commonly used in the carton industry. As indicated before, economy of make-ready and adaptibility to short runs makes this the most commonly accepted type of machine. Also the electrotype problem is simplified because the plates are made and used and stored flat. Register troubles are reduced to a minimum and storage is easy and economical.

The chief objection to the flat bed type of press is its slower speed. This is chiefly due to the fact that the cylinder revolves twice for each impression. The impression occurs on the first revolution concurrent with the forward motion of the bed, then in the return motion of the bed we have an idle revolution of the cylinder. The rotary press on the other hand, makes an impression for each revolution, so the production of the flat bed is only one-half that of the rotary for the same revolution speed of the cylinders.

Grades of Paperboard for Cartons

● Now as to the grades of paperboard used for cartons.

The board used is boxboard, built up in plies in a cylinder type board machine.

For the best type of carton printing white patent coated and deluxe patent coated sheets are usually used because of the whiter surface. The designs are usually made with considerable screen work and the surface of the board must be smooth and sufficiently sized so that the ink will only partially sink into the board, leaving enough ink body on the surface to maintain a proper depth or richness to the printing. If the sheet is sized too much, the entire film of ink will sit on the surface and pick off or offset onto the sheet above. The proper balance as to amount of size is a difficult problem, which requires much research and careful technical control.

Bleached manilas are commonly used but are not adaptable to designs using screens. For solid blocks of color, bleached manila gives satisfactory results although the white portions are not as white as the patent coateds.

Single manilas, grays and chips are also used, but the printing is usually just type.

In connection with the patent coated boards it might be well to mention the priority restrictions on the use of chlorine which are forcing a reduction in the use of bleached pulps. The result will be the substitution of bleached manila for the patent coateds. To do this, care must be taken to obtain a good smooth surface and sizing must be carefully studied. We will probably see many changes in the design of the cartons, using heavy solids to cover up the darker color of the board.

Concerning Ink

● And now a few remarks concerning ink. It is interesting to note that after you papermakers get through making the board, and we printers get our machines rolling, the only thing that actually shows up is the layer of ink. Further, the board alone or the presses alone, produce no emontion appeals. It is only when the ink adheres to the board that we find an interesting article. It is the actual transfer of the ink which changes the board from a lifeless, uninteresting object to a living picture.

But ink can produce some ill effects also. In the case of cartons for food products, the inks must be odorless or a lot of good food can be spoiled. Or in the case of soap cartons, the inks must be alkali proof, else the housewife with her wet, soapy hands at the kitchen sink will find the ink bleeding onto her hands and clothes.

Now there are some inks that are the bane of the carton printer's life and about the worst of all are the gloss inks. We are familiar with printed jobs which have been varnished to give a smooth brilliant surface. The varnishing process uses special drying equipment so that little trouble is encountered—but when a customer desires to get that same glossy effect by using gloss inks he adds gray hairs to the head of the printer.

Gloss inks are special inks which are loaded with varnish. They require special hard-sizing of the board so that the ink will sit up on the surface. If the board is not specially sized the ink absorbs into the board and the gloss varnish with it, leaving a dull lifeless color. In some inks the color itself changes. But with hard-sized board the ink stands on top of the board, the varnish, with which the ink is loaded, comes to the surface and a brilliant finish results. But so does a lot of trouble from sticking and offset. That varnish finish on the surface is just perfect to grab hold of the sheet above and hang on.

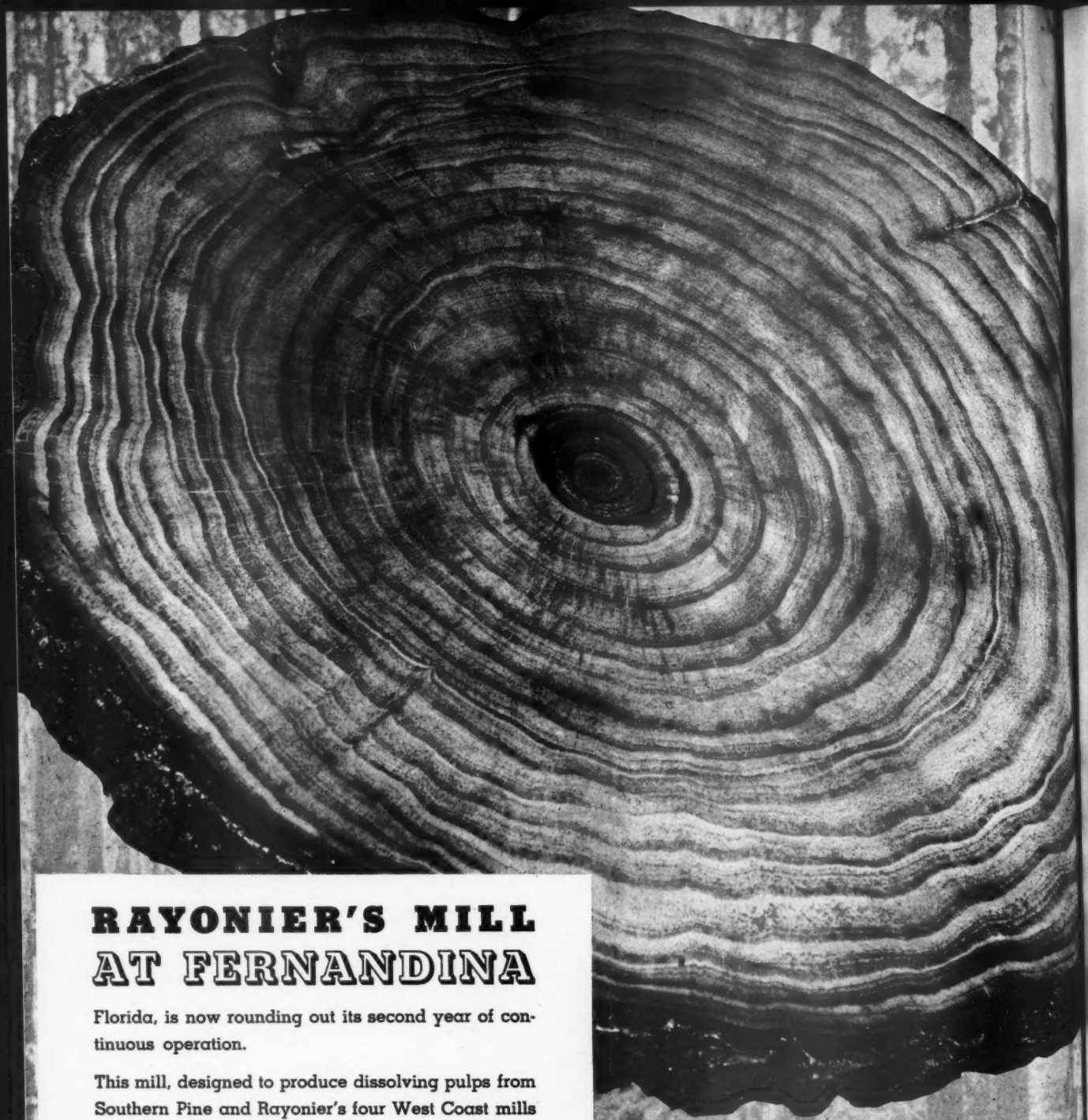
As a result, offset spray guns must be used. These spray a dry powder over the printed surface such that the granules of the powder hold the sheet apart sufficiently to prevent offset. Two types of spray material are largely used. Paraffine wax and dextrine gums. Both are handled as a liquid, blown out of an atomizer nozzle, solidifying as they fall toward the sheet.

Priorities also offset ink supplies. Note this statement by the International Printing Ink Division of Inter Chemical Corporation:

"General Metals Order No. 1 issued by the Office of Production Management covers the following metals, all of which are used in the manufacture of printing ink colors and in other Graphic Arts applications: antimony, cadmium, chromium, cobalt, copper, iron and steel, lead, manganese, mercury, molybdenum, and tin. Zinc has recently been added to this list, and as is generally known, aluminum has been virtually unobtainable for non-defense uses for several months.

"This means that all of these metals are on priority, and amounts available for Graphic Arts uses are strictly limited. Thus common ink colors from these metals (such as lead chromate colors) will be more difficult to produce in quantities. Supplies of zinc and copper for plates and zinc steel, and tin for metal containers, will also be affected."

Following the printing of the cartons, they are next cut and scored. The cutting press is similar in design to a flat bed printing press except that a cutting die replaces the electrotypes. In order to properly



RAYONIER'S MILL AT FERNANDINA

Florida, is now rounding out its second year of continuous operation.

This mill, designed to produce dissolving pulps from Southern Pine and Rayonier's four West Coast mills manufacturing dissolving and paper pulps from Western Hemlock, are providing raw materials of vital importance for civilian and defense requirements.

Along with other leading domestic industrials, Rayonier is extending full cooperation to accelerate our National Defense Program.

* * *

Illustration above is a cross section of twenty year growth of Southern Pine. The actual diameter of this cross-section is 27 inches. On its fast growing timber stands in the South, Rayonier's selective cutting and conservation programs are designed to provide a continuous domestic supply of pulpwood.

RAYONIER
INCORPORATED

Better Pulps for Better Performance

Mills: Hoquiam, Port Angeles, Shelton, Tacoma, Wash. and Fernandina, Fla. • *Executive Offices:* 343 Sansome St., San Francisco • *Sales:* 122 East 42nd St., New York

Trade Talk

of Those Who Sell Paper in the Western States

Walthers and Garrison Promoted By Zellerbach

● Harold L. Zellerbach, president of the Zellerbach Paper Company, has announced the appointment of E. H. Walthers as manager of the Chicago Division of the company, and of Bruce Garrison as manager of the Kansas City Division.

G. A. Mueller will continue in an important executive position in the Chicago Division, as well as act as a laison for the company's headquarters merchandising departments with many of its eastern vendors.

Mr. Walthers has been with the company for a number of years and was lately manager of the Kansas City Division of the company. Mr. Garrison, an easterner, has been with the company in the East for some time.

Visitors to Coast Paper Jobbers

● C. H. Cashmore, president of the Paterson Parchment Paper Co., Bristol, Pa., was a recent visitor to San Francisco and other Coast points.

● E. F. Ahearn, president of the John M. Hart Co., New York, was meeting friends in the Pacific Coast paper trade last month.

● Paul Wesco, sales executive of the Fox River Paper Co., Appleton, Wis., visited the trade on the Coast last month.

● Ed Hughes, Strathmore Paper Co., West Springfield, Mass., was visiting the trade on the Coast recently.

E. H. WALTHERS, Appointed Manager, Zellerbach Paper Co., Chicago.

Army Releases Large Tonnage Of Kraft Wrapping Paper

● By substituting cloth laundry bags for kraft paper wrappings for enlisted men's laundry, the Quartermaster Corps of the Army has effected considerable savings in the use of kraft paper. Consequently, the Procurement Branch of the Jersey City Quartermaster Depot is releasing as of November 1, 50 per cent of 1,063,940 pounds of kraft wrapping paper which it has contracted for.

Providing no requisitions are received in the meantime, the balance of the tonnage will be released as of December 1, 1941. The contracts cover 214,500 pounds of 18-inch kraft wrapping paper, 421,580 pounds of 36-inch kraft, 76,500 pounds of 24-inch kraft, 306,000 pounds of 48-inch kraft, and 45,360 pounds of 30-inch by 40-inch kraft sheets.

Zellerbach Employees Hold Lucky Number

● Dick Prager, in the headquarters resale department, Zellerbach Paper Company, and Miss Mildred Brown, secretary to the credit manager, San Francisco Division, have reason to believe in lucky numbers. They recently divided a grand prize of $5,000.

Zellerbach Recreation Clubs Hold Party

● The Oakland Division Zellerbach Recreation Club were hosts to the San Francisco and Headquarters Division of the club at a most enjoyable Halloween party at the Claremont Hotel, Berkeley, October 31.

Everybody came in costumes and prizes were awarded to the most original. There were 280 present.

Colored Newsprint Production Reported Declining

High cost of dyes and growing difficulty in obtaining them in Canada due to wartime shortages, priorities and transportation disruption, is discouraging the consumption of colored newsprint, according to officials of Powell River Company.

The tendency is said to be definitely against increasing use of colored papers and rotogravure, chiefly due to wartime costs. Several newspapers have abandoned their colored paper schedules entirely.

Production of colored newsprint has been a headache in many mills as it usually involved additional processing for which there was insufficient compensation in the price differential.

Henderson Accuses Paper Jobbers of Profiteering

● Leon Henderson, price administrator, on November 3rd accused jobbers in the coarse paper trade of "extortion and profiteering" and said he was considering the establishment of price ceilings on several grades. Jobbers will be called here to discuss the schedule, which will affect maximum prices that jobbers and wholesalers may charge.

Mr. Henderson said manufacturers are selling kraft paper to jobbers at about 4½ cents a pound and that ordinarly, the jobbers would resell this paper at prices ranging from 5 to 5¼ cents in large quantities to somewhat higher prices for smaller amounts. Actually, he said, jobbers recently have increased their prices to as high as 8 or 9 cents a pound for large quantities and even higher for small quantities.

R. O. Young Visits Camas Mill

● R. O. Young, assistant vice president, Crown Zellerbach Corporation, of San Farncisco, California, office, was at Camas, Washington, on a business trip early in November, spending several days at the Crown Willamette Paper Company plant.

New Freight Regulations To Save Paperboard

● Modifications of regulations governing the shipping of freight in corrugated and solid fibre shipping containers, which are expected to save approximately 10 per cent of the paper board used in that manner, have been put into effect on American railroads as a result of cooperation by the railorads with the Containers Branch of the Office of Production Management.

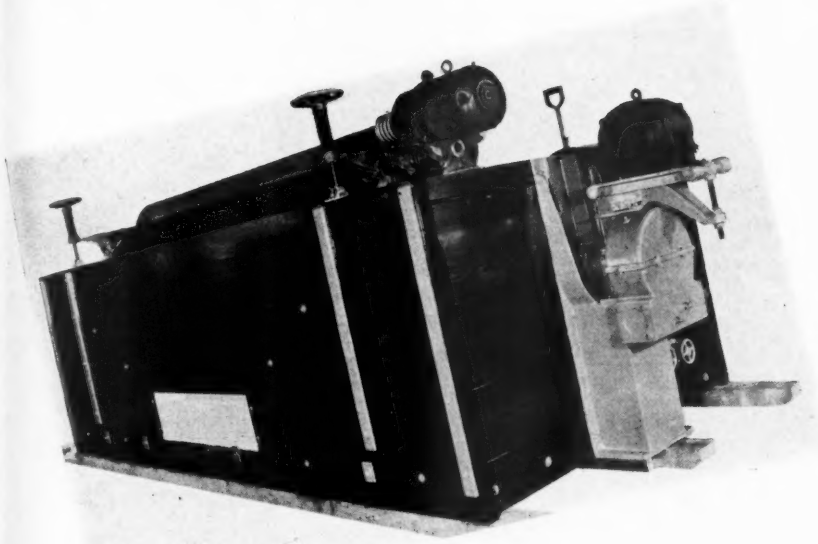
With the approval of Commissioner C. B. Aitchison, of the Interstate Commerce Commission, an order modifying the container regulations has been issued by the Classification Committee of the Association of American Railroads.

The effect of the modification will be to provide for defense uses between 250,000 and 300,000 tons of paper board per year without using any additional raw materials or supplies. The Containers Branch of OPM believes this will enable the fibre box manufacturers to meet all present shipping container demands.

The new specifications were proposed by the Simplification Committee of the Association of American Railroads after consultation with the Conservation Committee of the fibre box manufacturers. Hearings were held by the railroad committee in various sections of the country.

In substance, the new regulations save material by permitting the use of thinner and lighter materials in the manufacture of fibre shipping containers.

WILLAMETTE RIVER MILL



One of the THREE "IMPCO" Cypress Vat Double End Discharge Deckers with moulds 42-in. diameter by 120-in. length of face, Rubber Covered Couch Roll carried in anti-friction bearings, with "IMPCO" Booster Couch Roll Drives. Main drives through totalling enclosed worm gears.

Below is pictured the Dunbar Drive with which all "IMPCO" Flat Screens are equipped. The Dunbar Drive is uniform in its action, sturdy and quiet.

Among the 1941 installations of "IMPCO" equipment in Pacific Coast mills, are these vacuum washers, flat screens and deckers now operating in a large pulp and paper mill on the Willamette River in Oregon.

The plant modernization program included two "IMPCO" 8 feet in diameter by 16 feet length of face, Double Valve, Rubber Covered and Rubber Lined, Zinc Hydrosulphite Vacuum Washers equipped with air pressure pulp dischargers, hydraulic traveling showers, rubber covered and lined valves, and with cloudy port filtrate separation for heat recovery.

The three "IMPCO" Cypress Vat Double End Discharge Deckers have moulds 42-inches in diameter by 120-inch face. The Couch Rolls are rubber covered, carried in anti-friction bearings and equipped with "IMPCO" Booster Couch Roll Drivers. The main drive is through totally enclosed worm gears.

The flat screens selected to modernize the mill's screening are twenty "IMPCO" 14-plate Bronze Vat Flat Screens with Dunbar Drives.

"IMPCO" Pulp and Paper Mill Equipment is designed and constructed to do the required job efficiently with a minimum of maintenance over many years.

CORPORATION

COUNTER-CURRENT PAPER STOCK WASHERS, DECKERS, WET MACHINES, INCLUDING HYDRAULIC WITH HIGH DENSITY VACUUM WET END · THORNE BLEACHING EQUIPMENT PNEUMATIC WATER FILTERS · THE IMPCO LINE OF "IMPROVED" EQUIPMENT IS ASSISTING IN THE ECONOMICAL PRODUCTION OF QUALITY PULP AND PAPERS

IMPCO

Viscosity Testing of Pulp

by LEO FRIEDMAN and ROGER DANA*

THE insolubility and chemical inertness of cellulose are properties that are of utmost importance in many of its uses and are the basis of modern pulping methods. The fact that cellulose will swell and pass into solution in cuprammonium hydroxide was discovered independently by Mercer and by Schweizer[40] in 1857. Such solutions are highly viscous and the viscosity varies with the concentration and quality of the dissolved cellulose. Ost[28] in 1911 was the first to propose the measurement of the viscosity of the cellulose solution for technical purposes to give an indication as to the nature of the cellulosic material.

In 1920 Gibson[19] and his collaborators described the use of viscosity measurements as a routine test in textile laboratories for estimating the effect of technical processes on the strength of cotton goods. Punter[46], in the same year, discussed the effect of the properties of cotton and the nature of the treatment to which it was subjected upon the properties of nitrocellulose produced from it, and the correlation with the viscosity of the cellulose in cuprammonium solution. About this time Joyner[25] did a considerable amount of work upon the methods and equipment that could be used for the viscosity determinations.

The first application of the viscosity test as a technical test in the wood pulp industry was around 1930. In 1932 the TAPPI Tentative Standard for viscosity measurement was published. Since then it has been revised and corrected several times. The viscosity test is now used as a standard upon which the properties of wood pulps for certain uses are based and as a general mill control test.

Methods for Determining Viscosity

● Two general methods have been used in determining the viscosity of the cellulose cuprammonium solutions, namely, the efflux and the falling ball methods. Ost[28], in his experiments in 1911, used an apparatus of the efflux type. He found that the viscosity of the solutions decreased with time and he also recognized the desirability of avoiding contact between the solutions and oxygen during the preparation of the cellulose solution. To overcome this latter source of error Gibson[18] in 1920 devised a hydrogen capillary viscometer which permitted preparation of the cellulose solution and the determination of viscosity in an atmosphere of hydrogen.

The falling ball method was first extensively applied by Joyner[25] in 1922. His apparatus was also so designed as to permit solution of the cellulose and determination of the viscosity in an atmosphere of hydrogen.

Until recently almost everyone who has done any work on the viscosity of the cellulose-cuprammonium solution has used a different method for the determination. Both the falling ball and the efflux methods have been used with a wide variation of cellulose concentration in the solutions. This has hindered the correlation of data from the work of different investigators.

The general purpose of these early developments in methods for viscosity measurement was to prevent contact between the solution and oxygen of the air. Because the solutions required for good accuracy in the falling ball method should have a high viscosity, and their preparation required an unnecessary amount of work and time, Clibbens and Geake[8], in 1928, proposed the use of a rate of flow viscometer in which the solution is made in the measuring instrument itself and there is no danger of exposure to air in transferring the solution from the dissolving vessel to the viscosity measuring device. The method now used as a standard in the pulp and paper industry utilizes a viscometer of this type and is a modification of the Shirley Institute method.

The standard TAPPI method for the determination of viscosity has several bad features. One of these is that only about 0.2 gram of oven-dry pulp is used in each tube. This calls for accurate weighing and transferring of the pulp from the balance to the tube. Due to the finely divided character of the cellulose sample this transfer without small loss is difficult. To overcome this difficulty, Reuben[47] has suggested that the pulp be cut into ⅛-inch squares instead of shredding. Good technique is also required to avoid introduction of air to the tube when filling and adding the pulp sample. Failure to take the necessary precautions will result in a solution of lower viscosity.

Since the capillary through which the solution must flow is small, a particle of cellulose, representing such a small amount of the sample as to cause a negligible error in viscosity by failure to dissolve, may nevertheless cause extremely large errors by slowing down or actually stopping flow of solution when it passes into the capillary. Other disadvantages of the method are that only one determination can be made on a solution and

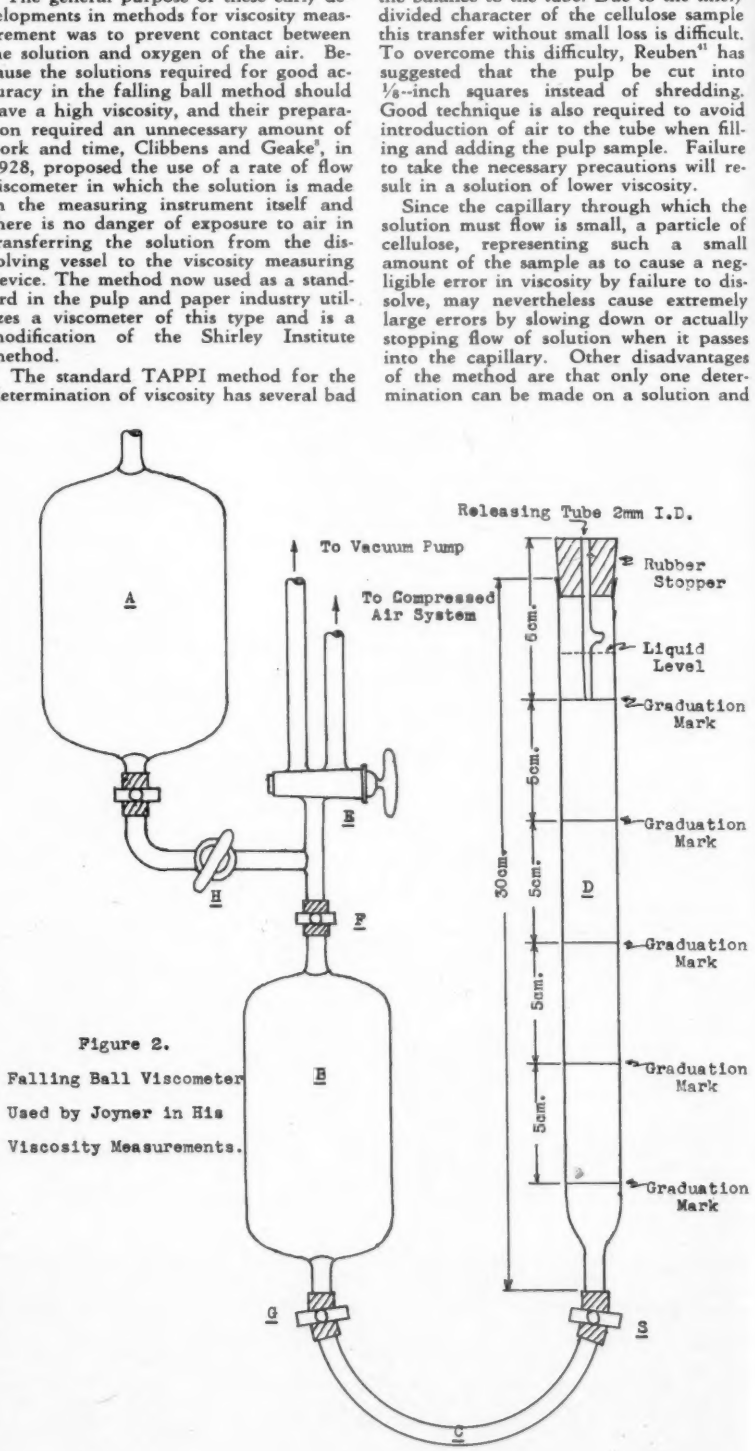


Figure 2. Falling Ball Viscometer Used by Joyner in His Viscosity Measurements.

*Department of Chemistry, Oregon State College, Corvallis, Oregon. Presented by Dr. Friedman before the dinner meeting held by the Pacific Section of TAPPI at the Crown Willamette Inn, Camas, Washington, November 4, 1941. Mr. Dana's present adddress is Longview Fibre Company, Longview, Washington.

this determination takes a long time. Fifteen hours is the recommended time for solution of the cellulose.

Many different methods have been proposed to shorten the time required for the test. In most instances this has been accomplished by faster solution of the cellulose through more vigorous agitation. Faster methods have been sought so that viscosity measurement might serve as a control test during pulp manufacture. To mention only some of the methods described during the past decade:

Brauns[4] in 1930 described an all glass apparatus so constructed that the solution of cellulose and viscosity determination are carried out in an atmosphere of nitrogen in about 30 minutes.

Through use of mercury in place of a metal wedge to stir and break up the solution into a coarse emulsion, Gershzon[17] and Tumarkin[58] in 1933 worked out rapid methods for viscosity determinations.

The use of ammonium hydroxide for preswelling of the cellulose before solution in cuprammonium was incorporated into rapid methods by Nikitin and Najrodskii[34] in 1935 and Pravdin[39] in 1936.

Special shaking devices were used by Fabel[15] and Enneraara[14] in rapid methods also described in 1936.

Rich[42] has combined several of these ideas with a preliminary fluffing of the cellulose by washing with acetone in a method described before this section last year.

Preparation of the Cuprammonium Solution

● The general procedure for the production of the cuprammonium solution involves the formation of copper oxide, and the subsequent solution of this in concentrated ammonium hydroxide solution. The resulting solution contains some material of colloidal nature. Stamm[49] has reported that this is undoubtedly a copper hydroxide sol, and stated that probably less than 10 per cent of the copper concentration is in this form. The amount depends upon the relative concentration of the constituents and the method of preparation of the solution.

There have been several different methods used for the production of the cuprammonium hydroxide solution. Some of these have not been satisfactory due to the large amount of nitrite which is formed along with the cuprammonium. According to Ishii[23] the nitrite forms a double salt with the copper and this salt will not dissolve cellulose. Another disadvantage of most of the methods is the time required to make the solution.

The cuprammonium solution used by Ost[38] was made by treating a solution of $CuSO_4$ with ammonium hydroxide. The basic copper sulfate thus obtained was dissolved in ammonium hydroxide.

Joyner[25] was the first to prepare the solution by bubbling air through a mixture of copper turnings and concentrated ammonia solution. He found that a concentration of more than 30 grams of copper per liter could be obtained in this manner. This, however, required the bubbling of air through the solution for a long period of time. More recently oxygen has been substituted for air in order to shorten the time. The use of oxygen has the disadvantage of larger nitrite formation. The solution of the copper is also speeded up by having clean copper turnings. For this reason they are usually cleaned with dilute acid before using.

Joyner found that a small amount of sucrose added to the solution would aid in the solution of the copper. It not only made possible higher concentrations of copper but also stabilized the solution. A solution containing 25.6 grams of copper and a little sucrose per liter was found to be unaltered after three weeks. A small amount of sucrose did not affect the viscosity, but large amounts (10-40 g/l) increased the viscosity. He found cellulose to be insoluble in cuprammonium solution containing 50 g/l of sucrose.

Joyner also found it necessary to cool the solution with ice during the preparation to prevent excessive formation of nitrite and loss of ammonia. The cooling has a great effect on the loss of ammonia since at 0° C. the solubility of ammonia is about twice that at 20° C. The solution should be stored at a temperature below 5° C. Mease[30] and Rich[42] have described refrigerators in which the solution can be stored for long periods of time without loss of ammonia and excessive formation of nitrites and which permit removal of the solution for use without disturbing the container.

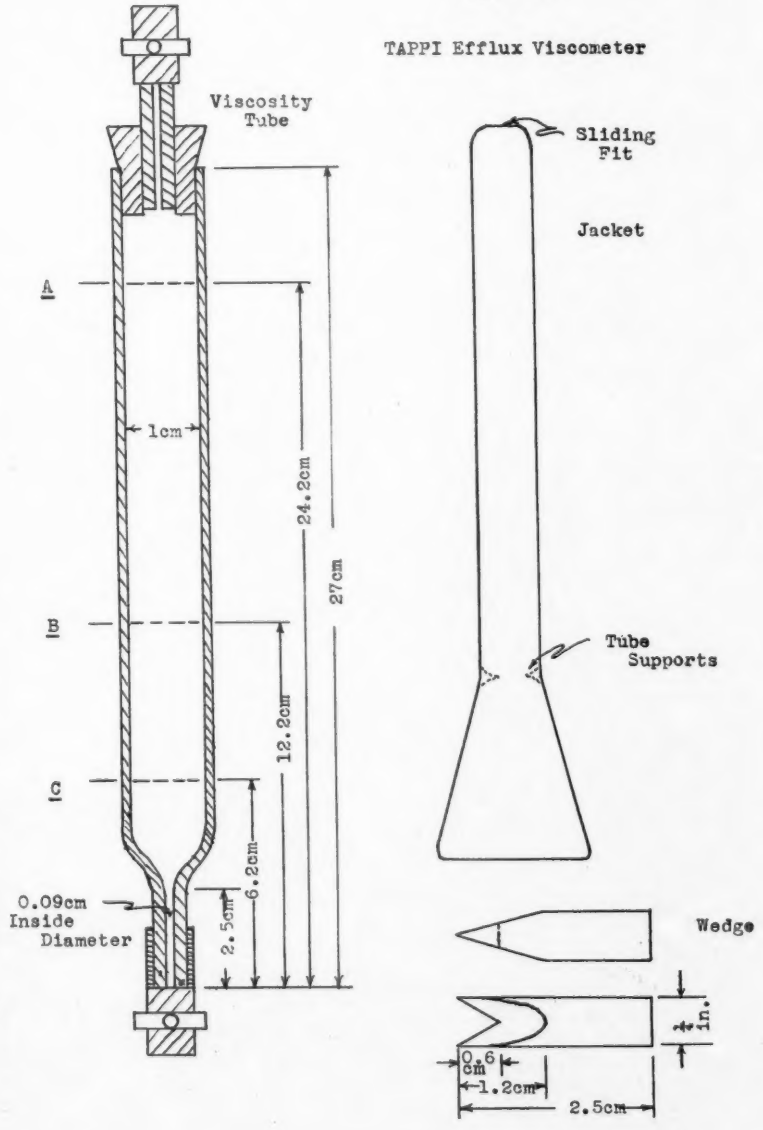
It is also necessary to keep the cuprammonium solution in the absence of light since the solution is quite photo-reactive. Upon exposure to light the unstable copper-ammonia complex breaks down very quickly.

Solutions containing many different concentrations of copper and ammonia have been proposed for dissolving cellulose. At the present time the TAPPI Standard calls for 15.0 ± 0.2 grams of copper, 200 ± 10 grams of ammonia and 2 grams of pure cane sugar per liter. The methods for determining the copper and ammonia concentrations are given in the Standard.

A quantitative study of the influence of the various variables on the preparation of cuprammonium solution is now under way in our laboratory at Oregon State College in connection with some studies on viscosity measurement.

Figure 3.

TAPPI Efflux Viscometer



Nature and Properties of the Cellulose-Cuprammonium

● The cuprammonium solution is not a true solvent for cellulose, and when cellulose is added to it a true solution is not formed. While it is often called a solution the result of the addition of cellulose to cuprammonium hydroxide is a dispersion of colloidal particles of the cellulose which shows the Tyndall phenomenon, and according to Sisson[47] the particles show Brownian movement, possess a negative charge, and are flocculated by electrolysis. There is still at the present time considerable discussion as to the nature of these colloidal particles and as to the cause of the high viscosities of some of the so-called solutions.

Explanations of the nature of the solutions have been based upon two theories of cellulose fiber structure. One of these is the macromolecular or continuous theory, and the other is the micellar or discontinuous theory. The macromolecular theory was developed by Staudinger on the basis of viscosity measurements. The colloidal behavior of the solutions of cellulose and its derivatives, according to this theory depends upon the length and form of the macromolecules. Staudinger[51] states that the micellar state should be limited to the solid state of cellulose, since he believes that the colloidal particles of cellulose in dilute solutions are macromolecules.

The micellar theory of cellulose is based upon the theory that cellulose particles are formed by union, or bundling, of many molecules of the elementary cellulose substance. According to Lieser[50] cellulose in cuprammonium solution forms a micellar solution. He claims that qualitative examination of the cellulose-cuprammonium solution or dispersion of cotton fibers with an ultramicroscope reveals the presence of apparently unchanged cellulose particles.

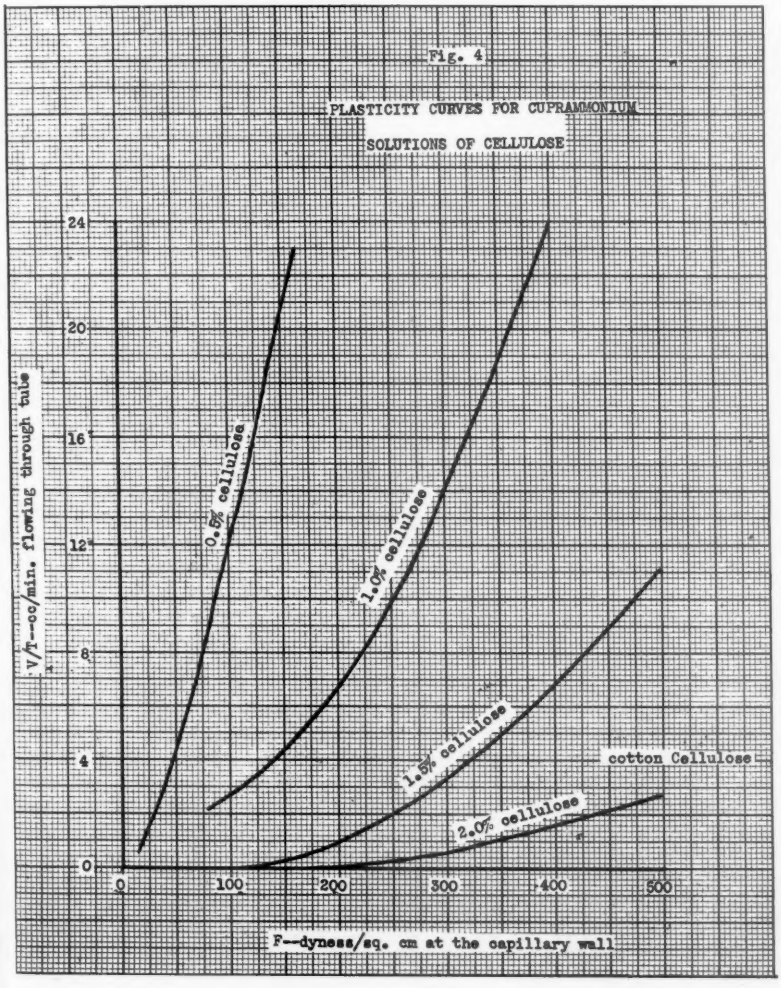
The two theories of cellulose structure, however, are only in conflict as to the state of the colloidal particle since it is thought that the micelles are composed of macromolecules.

It is thought that the difference in viscosity of different cellulose solutions is due to the difference in the chain lengths of the colloidal particles. Farr[10], however, has proposed the theory that the viscosity of dispersions of cellulose is due to solution of the cementing substance surrounding the cellulose particles and that the latter do not dissolve in the cuprammonium solution. She believes that the cellulose particles separated from the cementing material do not form viscous cuprammonium solutions. The inaccuracy of this viewpoint has been well demonstrated in the recent work of Heuser and Green[22].

Attempts to account for the specific action of the cuprammonium on cellulose have been made by many investigators. Traube[52] formulated a theory of solvent action of the cuprammonium solution upon cellulose along chemical lines. Hess and Messmer[21] proposed the theory that a complex copper-cellulose ion is formed, and that this ion forms a salt with the cuprammonium cation of the solution. According to Neale[33] the cellulose-cuprammonium dispersions belong to the class of colloidal electrolytes typified by the soap solutions. It is thought, according to this theory, that the strong base, $Cu(NH_3)_4(OH)_2$, which is stable only when a large excess of ammonia is present, forms with cellulose, which acts as a weak acid, a soluble basic salt. The cation is "crystalloidal," and the anion is "colloidal."

As is characteristic of many colloidal solutions, cellulose-cuprammonium solutions exhibit plastic as well as viscous flow. Carver and Folts[7] have shown by tests the plasticity of the cellulose-cuprammonium solution. Their results are shown in Fig. 4. In their work they used a cuprammonium solution containing 1.5 g of copper and 20.5 g of ammonia per 100 g of solution. Fig. 4 shows the relationship between the force, F, in dynes/sq. cm. on the capillary wall, the cellulose concentration and the number of cc. of the solution per minute flowing through the capillary tube, V/T. The phenomenon is distinct in more concentrated solutions of cellulose and becomes negligible at low concentrations.

Fig. 4



Considerable work has been done upon the relationships between the concentration of the constituents and the viscosity of the cuprammonium solutions of cellulose. Joyner[25] in work on the effect of the copper concentration upon the viscosity found that when the copper concentration was plotted against the solution viscosity for different cellulose concentrations, a series of hypobolic curves was obtained. His results are shown in Fig. 6. Each curve represents a different cellulose concentration. The lines which are drawn across the curves are from data obtained by the dilution of the cellulose-cuprammonium solutions of high copper concentration to those with low copper concentration. The copper concentration was often below the amount required to disperse the cellulose. He found that there is a limit to the effect of the copper concentration on the viscosity of the solution, and that this limit was about 30 g/l. With low copper concentrations there is a tendency for the solution to have an infinite viscosity, but this is not realized since the cellulose will not dissolve completely in solutions containing low copper concentrations. However, when a solution containing sufficient copper to dissolve the cellulose is diluted with ammonia, the cellulose will not be precipitated even if the copper concentration is reduced below the point where cellulose will be dissolved by the solution.

Joyner[25] also investigated the effect of variations of the ammonia concentration upon the viscosity of the cuprammonium solutions of cellulose. The results of this work are shown in Fig. 7. The lines except for low concentrations are practically parallel. A decrease in the log of the viscosity is directly proportional to the increase in the ammonia concentration, and it is independent of the viscosity of the cellulose, the amount taken or the amount of copper in the solution.

The saturation point of the cuprammonium solutions of cellulose as reported by Compton[10] is 4.5 per cent cellulose. At this concentration, which is independent of the copper concentration, a definite equilibrium is established between the dis-

persed and the undispersed cellulose particles. Connerada[11] states that the solubility of cellulose in cuprammonium solution is proportional to the concentration of colloidal cuprammonium hydroxide. According to Bialkowsky[3] 2.3 grams of cellulose require about 1 gram of copper for solution, and the solubility of cellulose in cuprammonium solution is dependent on only the copper concentration provided there is sufficient ammonia present. He also stated that the ability of the cuprammonium solution to dissolve cellulose is independent of the viscosity of the solution. Jolley[24] reported that for a constant copper concentration an increase in the ammonia concentration increases the solvent activity of the cuprammonium solution.

It has been reported by Joyner[23] and by Hahn and Bradshaw[20] that when the logarithm of the viscosity is plotted against the cellulose concentration for a given copper concentration the curve obtained is a straight line or approximately so. See Fig. 8.

The effect of air and light on the viscosity was first noted by Ost although he was not certain as to the exact cause of the decrease in the viscosity of the solution with time. According to Nakano[31] the viscosity of the cellulose-cuprammonium solutions decreases with time until a constant value is reached. Gibson, Spencer and McCall[19] were the first to do quantitative work on the effect of air upon the viscosity. Their results are shown in Table I. The solutions used in making the tests were 1 per cent cellulose solutions which had been prepared in the presence of hydrogen.

Gibson, Spencer and McCall[19] also investigated the effect of light upon the cellulose solutions. The results are shown in Table III. The viscosities are relative to a viscosity of one for water.

Application of Viscosity Test to Pulp and Paper Industry

● The main use of the viscosity measurement in the pulp and paper industry is to determine the change in fiber structure, and the amount of degradation that takes place in the different processes to bring about this change. As already mentioned the exact cause of the viscosity of cellulose in cuprammonium is still under discussion. It is, however, an accepted fact that the viscosity depends upon the fiber structure. Clibbens and Ridge[9] have pointed out that the viscosity and fiber strength are directly proportional. Sakurada[44] has attributed some of the viscosity effect to the foreign intermixed membrane elements which are removed more or less by the different purification methods to which the cellulose is subjected.

According to Carpenter and Lewis[6] the original and raw cooked fibers are covered with a sheath of lignified material which swells in cuprammonium solution only to a relatively small extent. This then causes a larger colloidal particle and as a result a higher viscosity. As the fibers are slowly degraded, the original sheath is destroyed allowing the micelles to be pulled apart before the molecules are themselves broken down. This causes a lowering but not complete loss of the viscosity of a cuprammonium solution of cellulose. In most cases the viscosity test is not based upon the size of the cellulose molecule, but upon the treatment to which the cellulose has been subjected. The less the fibers are purified, the higher the relative viscosity.

The viscosity test is, therefore, an indication as to the degree of breakdown of the cellulose fibers to micelles and also the breakdown of the micelles. Since the strength if directly related to the structure of the fibers, the viscosity test is used to evaluate this property of the pulp. Brauns and Lewis[5] have, however, shown that the viscosity can not always be used in predicting the strength when the pulp has been prepared under conditions different from those ordinarily used commercially. It has also been found, as pointed out by Reuben[41], that strong West Coast pulps have been found with low viscosities, and, conversely, mediocre Western pulps with high viscosities. It is for this reason that the properties of pulp or cellulosic materials can be evaluated from the results of viscosity tests only if the previous history of the material is known. In general, however, a fiber of high viscosity has excellent physical properties.

Of the other tests of importance in determining the quality of pulp or other cellulosic materials, the alpha-cellulose test and the copper number are the most frequently used. The alpha-cellulose test differs from the viscosity test in that it only tells the percentage of the fiber micelles which have reached a certain stage of degradation below which they are soluble in 17½ per cent sodium hydroxide solutions. The alpha-cellulose test gives no indication as to the size of the micelles which constitute the alpha-cellulose. Several investigators[12 36 43] have reported that the alpha-cellulose content of a pulp increases when it is subjected to a dilute alkali treatment at high concentrations, but the viscosity of the pulp decreases.

That the copper number is not a reliable means for evaluating the strength of cellulosic materials was pointed out by Clibbens and Ridge[9] who reported that in the case of cotton a change in the

Table I

The Effect of Air on the Viscosity

Time in Contact with Air Hours	Viscosity* Solutions Standing	Solutions Shaken
0	73	60
½	73	8
1	72	4
2	63	3
4	48	2.5
10	31	----
30	16	----
40	12	----

*Relative to a viscosity of one for water.

Table III

The Effect of Light Upon the Viscosity

Time of Exposure to Light	Viscosity
Initial solution	1376
After exposure to bright sun light for 10 min.	191
After a further 4½ hours protected from light	186
After further exposure to sun light for 10 min.	84
After further exposure to sun light for 15 min.	56
After further exposure to sun light for 30 min.	38
After further exposure to sun light for 75 min.	27

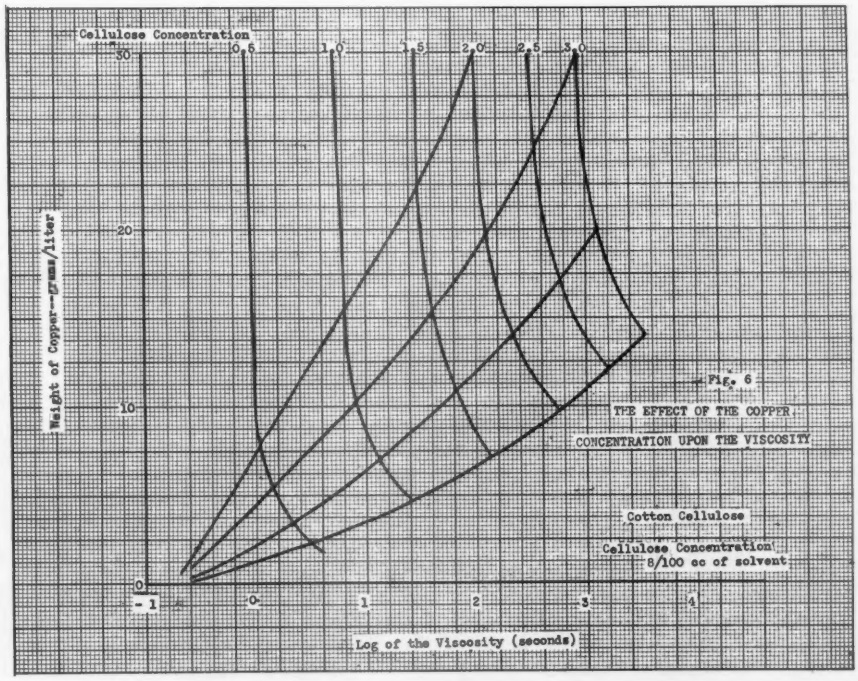
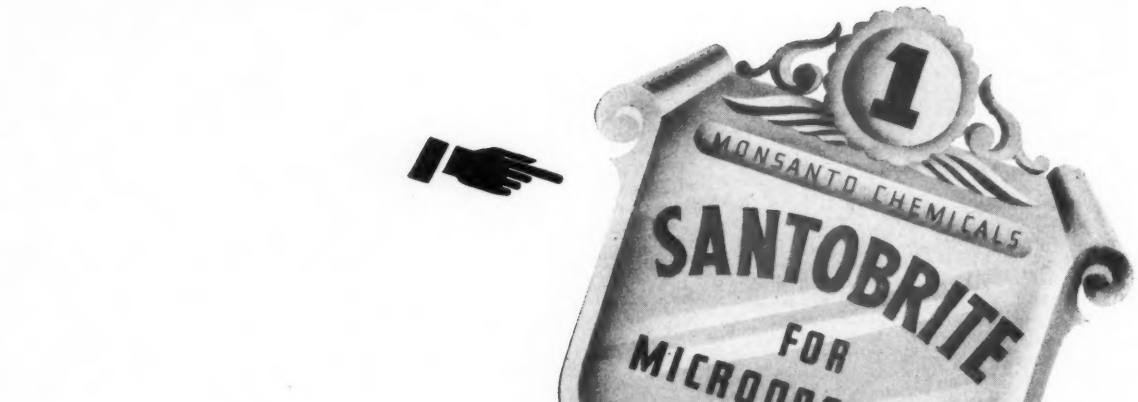


Fig. 6 THE EFFECT OF THE COPPER CONCENTRATION UPON THE VISCOSITY



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copper number of one point may result in complete loss, a 50 per cent loss or an insignificant decrease in the strength depending upon the type of chemical action to which the material has been subjected. The copper number can be changed by dilute alkali washes while the viscosity remains the same or decreases slightly. Kress[26] found that when a pulp of high viscosity was recooked in sulfite liquor the product had practically no strength. The viscosity was lowered 46.6 units while the alpha-cellulose content decreased by only 6.4 units and the copper number increased 1.78 units. Coster[12] has reported that the same pulp, bleached exactly the same way except for the alkalinity, will give a lower copper number the higher the alkalinity while there are no other appreciable differences as far as strength properties or viscosity are concerned.

It is for the above reasons, and also because the viscosity test is quite sensitive to degradation, that workers in the field of pulp and paper[3, 12] have stated that the viscosity test is important in evaluating the properties of cellulosic materials. It also is superior to any other known chemical test for controlling the degradation of cellulosic materials. The relationship between the viscosity test, other chemical tests, and the physical tests of several different pulp samples is shown in Table V.

Several attempts have been made to utilize the viscosity test as a control test in the various pulping operations. Okada and Hayakawa[35], Nakamura and Ichijo[32] and Reuben[41] have studied variations in viscosity during sulfite cooking, and have reported marked changes near the end of the cooking period. Viscosity changes during bleaching have attracted much attention and studies have been reported by Coster[12], Bialkowsky[8], Reuben[41] and Rich[42].

The Use of Other Solvents for the Determination of Cellulose Viscosity

● Because of the several difficulties encountered in the use of cuprammonium solutions of cellulose for viscosity determinations, other solvents have been suggested from time to time. The conversion of cellulose to viscose and the determination of the viscosity of the viscose solution have been suggested by Kung and Segar[27], by Oman[37], and by Weingand and Acker[54]. The results obtained were closely proportional to the cuprammonium viscosities, but since careful control of the preparation variables must be maintained to get duplicate results, the method offers no worthwhile advantages.

The use of zinc chloride as a dispersing agent for cellulose has been suggested by Letters[28] and by Smirnov[45]. The method involves a preswelling in concentrated zinc chloride solution, followed by dispersion of the cellulose at 65° C. Since the solution formed is not stable samples are drawn into a side arm of the

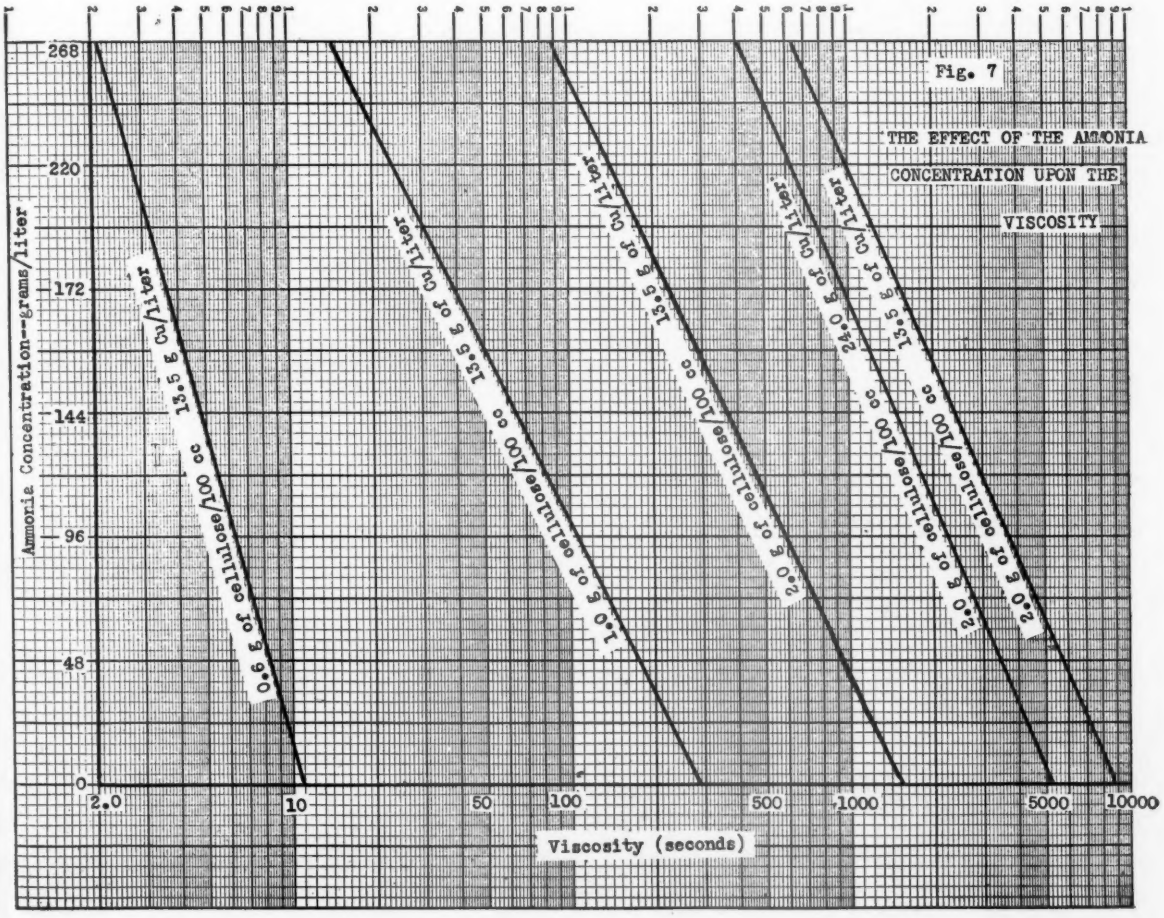
Table V

The Relation Between the Physical and the Chemical Tests of Pulp*

Sample	Mullen	Tear	Fold	Freeness
A	104	----	----	570
B	116	222	7700	585
C	95	297	4650	310
D	87	159	3740	500
E	99	265	4710	420
F	69	105	508	235

Sample	Alpha-Cellulose	Copper Number	Viscosity C.G.S.
A	92.5	0.20	48.99
B	88.5	1.10	56.05
C	87.2	2.40	40.40
D	85.7	3.31	10.10
E	85.6	2.43	25.24
F	88.8	0.73	10.10

*Coster.[12]



apparatus for viscosity determination from time to time. When solution is complete and no appreciable degradation has taken place, the solution viscosity is a maximum. Since the effect upon the viscosity of slight changes of conditions is large, the preswelling time is long, and the viscosity determination involved by the necessity of drawing a curve to obtain the maximum value, the test does not offer any advantages.

The use of concentrated phosphoric acid as a solvent has been proposed by Schmidt-Nielson[45], Eckenstam[13], and by Stamm[40]. Cellulose can be completely dissolved in concentrated phosphoric acid to form a dilute solution free of microscopic particles if the cellulose is first swollen in water and the acid concentration is built up gradually. As solution takes place, the viscosity increases to a maximum value. The test requires about two hours.

The conversion of cellulose into nitrates and the subsequent determination of the viscosity of the nitrate solution in acetone or butyl acetate has been proposed by Berl[2]. The solutions formed are stable and degradation is minimized by use of phosphoris or glacial acetic acid in the nitration mixture. It is claimed that the viscosity tests can be completed in three to four hours and that the results are easily reproducible. This method certainly seems worthy of further study.

In conclusion, I wish to express an opinion concerning the value of methods which, because of degradation during the solution and viscosity measurement, will give reproducible results only by exact duplication of experimental conditions. The rate of degradation of a sample of cellulose in cuprammonium will, I believe, be governed to a large extent by the quality of the sample. Hence, a high grade sample will degrade slowly, whereas a partially degraded cellulose will degrade more rapidly and will yield a solution with a disproportionately low viscosity. A good viscosity test should permit considerable latitude in conditions of solution, time, temperature, agitation, etc., and yield stable solutions.

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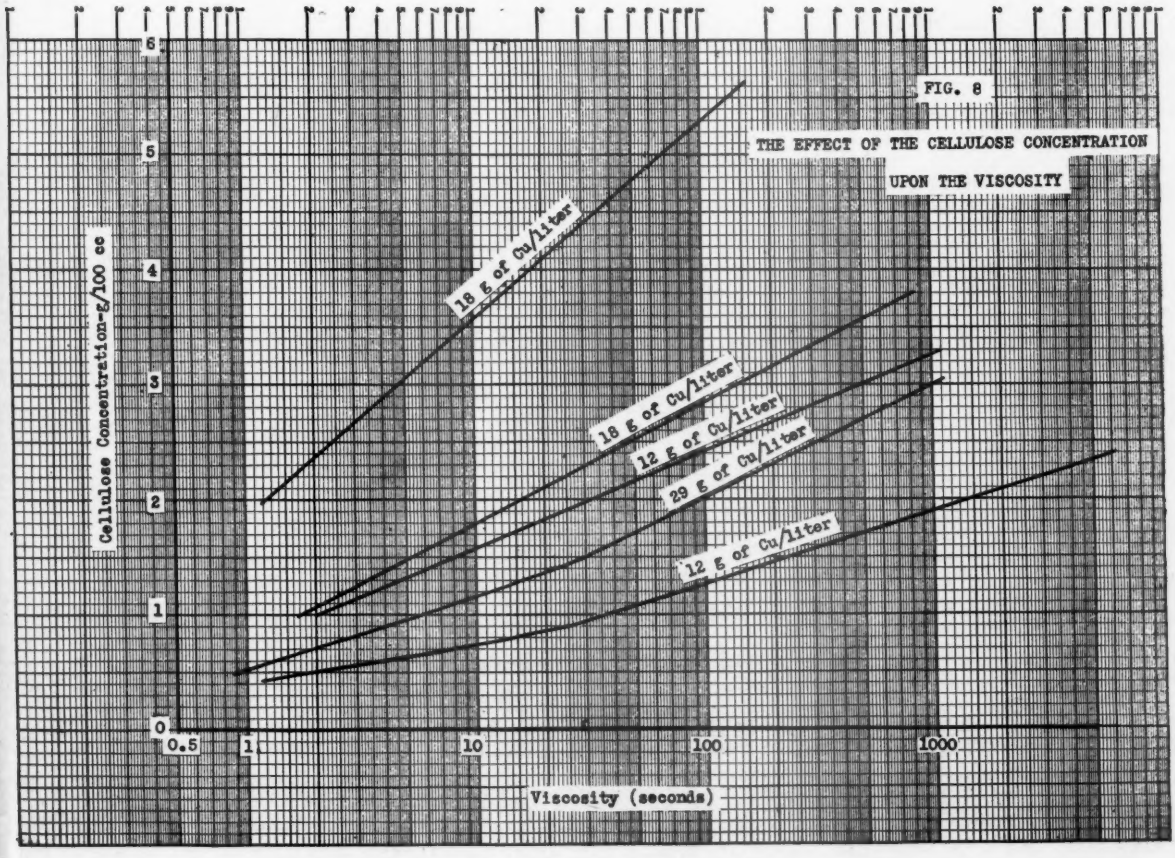

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British Columbia Mills Providing Technical Training

West Coast paper mills are co-operating with units of the industry in eastern Canada in providing special technical training for their employes. Powell River Company was one of the first to embrace courses of instruction along this line which are not to be confused with the regular apprenticeship training, which has been in force for the past eight years.

Objectives of the present program, which went into effect last September, were twofold. First, there was the idea of having as large as possible a reserve of trained or partly trained men for machine shop work — men for the drill presses, the lathes, shapes and the many other machines that are a part of every well equipped pulp and paper plant.

The purpose was not necessarily to turn out fiirst-class machinists, but to have a corps of men available to step into the shops as vacancies occurred or new jobs were created.

The second aim linked directly with Canada's war effort. The trainees in the paper mill machine shops are being prepared for possible employment in war industry. There are various types of repetition war work which may be carried out by partly trained men familiar with one particular machine.

Powell River Company's machine shop operates only one shift for mill operations. When the call comes, extra shifts will be arranged for the spare hours available—and this corps of men will be ready and trained to carry on immediately.

The classes have so far proved popular. Eighty employes applied for enrollment when they were first announced. Groups of students are now busy in the machine shop from 5 to 9 every evening. Those who take the courses must take them seriously and attend three nights a week.

At Powell River the program is being directed by Acting Mechanical Superintendent Ross Black. Class instructor is Herbert White of the mechanical staff, who combines the work with his regular duties as machinist on night duty.

There is no cost to the employes for this training, and all expenses are borne by the company, which also supplies a special tool kit for the use of the men on each machine.

Pacific Mills has been carrying on an effective training plan for its employes for several years and has been able to replace its experienced men when necessary with others who have received their training entirely at the Ocean Falls mill.

This is part of a long-team program which in the present war emengency, accompanied by extensive labor turnover, has been exteremely gratifying in its results.

Announce Apparatus for Conditioning Paper

● United States Patent No. 2,256,507, covering apparatus for conditioning paper, has been issued to C. G. Weber and M. N. Geib of the National Bureau of Standards. It is assigned to the Government of the United States, as represented by the Secretary of Commerce.

This invention relates to an apparatus for conditioning paper or other hygroscopic materials in sheet form to the best moisture content for printing, folding, coating, sealing, gluing, waxing, cutting, slitting, slotting, drilling, punching or for otherwise converting or treating.

The invention has for its object to provide a simple and inexpensive conditioning apparatus by means of which the moisture content of paper or like hygroscopic sheet material may be controlled within very close limits and in a relatively short period of time. With this and other objects in view, the invention consists of the novel construction of the conditioning appartus, whereby water is added in measured amounts to papers and the like to adjust the moisture content thereof to any selected condition; for adding calculated amounts of moisture to papers and the like being prepared by moisture conditioning for printing or other treatments and for materially reducing the time otherwise required to bring the paper or the like to a selected hygroscopic condition.

The invention also consists in the use of sprays or a spray chamber or both in conjunction with a conditioner to add controlled amounts of water to paper when conditioning in either an open or closed conditioner.

The apparatus was developed as a part of research being made in cooperation with the Lithographic Technical Foundation for improvement of the performance of papers in lithographic printing. It is discussed in the Foundation's Technical Bulletin No. 3, and in an article published in the March 6, 1941, issue of Paper Trade Journal.

September Paperboard Production 538,405 Tons

● Production of paper board in the United States reached a total of 538,405 tons during September, a small decrease from 545,116 tons in the preceding month but a large gain over 402,548 tons in the same month last year, according to the monthly summary issued November 6th by the Census Bureau. The September output brought the total for the first nine months of this year up to 4,476,926 tons, contrasted with 3,851,035 tons in the same period last year and 3,464,256 tons in the corresponding time of 1939.

Board production was at 95.0 per cent of mills' rated capacity in September, against 95.9 per cent in August this year and 71.2 per cent in September a year ago. Production in the first nine months of the current year averaged 87.7 per cent of mills' capacity, compared with 72.6 per cent a year ago in the same time and 68.3 per cent two years ago.

New orders received by manufacturers for board in September called for a total of 542,792 tons, or in excess of the month's production, comparing with 565,853 tons in August and 399,133 tons in September last year. Unfilled orders held by mills at the end of September were for 444,736 tons, contrasted with 452,966 tons a month previously and 131,242 tons on the same date a year ago.

Board mills consumed 422,361 tons of waste paper in September, against 411,073 tons in the month preceding and 283,660 tons in the same 1940 month, making a total for the first nine months of this year of 3,331,700 tons, compared with 2,679,825 tons in the similar time last year and 2,450,976 tons two years ago.

Stocks of waste paper at board mills at the end of September amounted to 218,257 tons, contrasted with 237,339 tons a month before and 245,685 tons a year previously.

Graham Vernig Called To Active Naval Duty

● Graham Vernig, research chemist of the research laboratories, Weyerhaeuser Timber Company, Longview, Washington, and a member of the Naval Reserve, was called to active duty early in November. He will probably be stationed on the Atlantic coast.

He is to do special service work, as an engineer in the volunteer service, with a rating of ensign. Vernig would have been in the Weyerhaeuser laboratory seven years, had he remained until December.

George Charters Takes Vacation

George W. Charters, assistant resident manager, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, left November 6th, with Mrs Charters, for a two weeks' vacation. They are driving to South Bend, Indiana, visiting their son who is attending at Notre Dame. Before returning they intend seeing the Notre Dame-University of Southern California football game.

Preventive Maintenance For the Paper Machine

by P. H. TIGWELL*

VERY often machinery of identical design and operating under similar conditions will give excellent results in one mill, and fail in another. In some cases, this is due to faulty design or defective materials, but usually it is due to the difference in the care and attention given the equipment.

Assuming that the machinery is properly engineered, the materials are good, and the workmanship is of high standard, the most important causes of mechanical difficulties are:

1. Lack of attention to proper lubrication—the use of cheap lubricants, and lubricants not having the proper characteristics for their purpose.
2. Failure of the mill to give equipment proper inspection.
3. Lack of detailed operating instructions to mill.

There is no practical way of testing the mechanical parts that enter into a paper machine before it is placed in actual service. The expected life of a paper machine is so long, and the duty so severe, that several years of experience with actual service must be had, and operating results carefully followed, to be of much value to the designing engineer. This all means that each change in design has to be most carefully studied, and every effort made to have the engineering as nearly perfect as possible. This also means that, as we are all human and make mistakes, and as long as changes in design are made (with the resulting progress in increased speeds and larger production), we shall always be confronted with some failures, due to the engineer's inability to foresee and provide against all of the elements involved.

The old machine required only the simplest of open type construction. The modern high speed, heavy duty machine consists of precision made parts tightly enclosed for proper protection from the elements, and hidden from sight. As a vivid illustration of this, compare the old core gear drive with the modern hypoid or spiral bevel enclosed unit. As many of you present will testify, the modern drive will very seldom get out of order, and if given proper lubrication and occasionally a little attention, will provide for many years of trouble-free service. However, if for one reason or another, something does happen to one of these drives, I believe we all agree that to make adjustments and correction requires a much higher degree of mechanical skill than was called for in the case of the old open core gear drive. Drive units have been used here to make this comparison, but the same difference holds true throughout the design of the paper machine proper.

Good Machinery—Good Mechanics

● For these reasons, if for no other, the care and maintenance of all paper mill equipment should be placed in the hands of the most skilled mechanics — men who are anxious to know, and capable of knowing all about the hidden construction, and how to proceed with adjustments if and when they are required. Even men of this ability require (and should receive) all possible assistance from the builder of the machine in the way of detailed instruction covering the proper operation and care of the equipment. The machine builder sincerely desires to furnish such instructions. In order for the mills to gain the most from them, the instructions should be arranged and handled systematically and placed in the hands of capable men. Unless systematically handled, they very often do not reach those most interested and concerned; then again, when changes are made in personnel, they frequently are not handed down to the new men who follow. Most machinery builders are making an earnest effort to accompany their product with complete instructions on proper care and operation. As a result, the mills as a general thing will have organized to gain the most possible benefit from this essential information.

Faulty Lubrication Chief Trouble Source

● Careful analysis of reported mechanical failures from the mills reveals that a very large percentage of them is due either to lack of lubrication, or to the use of lubricants of improper characteristics. In many cases, a low grade, cheap lubricant, entirely unsuited to the purpose was used. We have known cases where (with proper lubrication) equipment has stood up well for many years, and inspection has revealed it to be in excellent condition, apparently good for an indefinite period of service. Then, shortly thereafter, failures start to take place, and inspection brings out the fact that, in an effort to save in operation costs, a cheaper grade of lubricant has been put into service. It is surprising and interesting to find that in many instances this change has been made without the knowledge or consultation of the operating personnel.

On the subject of lubrication, I wish to say that from close observation, it is my belief that very few mills give this very important matter the dignity that it deserves. Surprisingly often, the oiling is found to be in the hands of men entirely incapable of understanding the requirements of modern machinery. It seems that very often the oilers have not been selected because of their capabilities in that work, but because it could be substituted as an easier job for some old employee who has become physically unfit to continue his work in some other department. Often the past work of this employee has been of a physical rather than mechanical nature. Obviously, the most economical results cannot be expected from such procedure, and much can be accomplished in the way of lowering maintenance expense by bettering the personnel in the direct supervision of this important work.

Organizing Preventive Inspection

● We all realize the importance of preventive inspection. The question is: How can it be brought about in an economical way? It is probable that no set plan can be evolved to fit every mill organization; but, with your permission, I shall outline a general set-up arrived at from knowledge of various plans already in practice in many mills.

1. Every machine in the mill is to be assigned a number; in case of machines having a multiplicity of parts, such as a pa-

*Beloit Iron Works, Beloit, Wisconsin. Presented at the 1941 Fall Meeting of TAPPI, Ann Arbor, Michigan, September 16-19, 1941.

Let's be honest about it...

I'M NO lubrication "technologist." No self-respectin' Shell salesman I know of calls himself one, either!

But we salesmen do claim we know our Shell lubricants — and our Safety Factors. We're dead sure no so-called lubrication "technologist" can offer you as much.

This is a strong statement to make—even in an ad—but the facts behind Shell Safety Factors will bear me out.

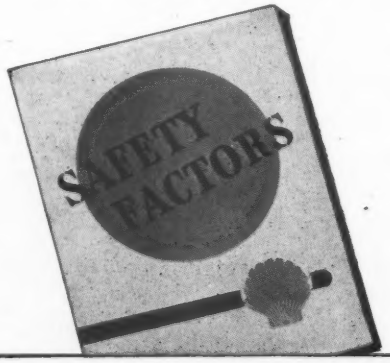
You see, some of the best lubrication brains in America created Shell's Safety Factors to solve the lubrication problems of firms just like yours. That's why you can't afford *not* to know about Safety Factors.

Phone the local Shell office... and I'll tell all — without wastin' your time!

Your Shell Salesman

SHELL'S SAFETY FACTORS PROVIDE

- Better control of friction heat
- Better control of combustion heat
- Slower rates of wear
- Increased power off-take
- Savings on shutdown losses
- Reduced outlay for lubricants



per machine proper, every bearing and roll or sub-assembly or, in fact, any part which is liable to require inspection or maintenance, should be assigned an identifying symbol or number in addition to the identification number for the machine proper. Some mills already have this in effect, or at least partly so. This should be accomplished for the purpose of identifying and properly recording the inspector's reports, and for the posting of cost of the work done on these parts.

2. A set of index cards is to be provided and properly filed, with each machine or sub-part having a card bearing is identifying number. These cards should be so arranged as to tie in with the cost department system, so that they are used for noting the work done on the part as well as the cost of the work, and the date on which it took place. Many other notes for future reference can be posted on these cards, such as the date when the part was last carefully inspected, amount of lost time when the repairs were made, etc. Should failures occur and continue, these records will prove to be of great value in helping to determine what the future attitude should be toward the repairing of the part involved.
3. Many mills combine the jobs of oiling and wiping the machinery. It is suggested that these two jobs be completely divorced, and the job of lubricating and inspecting be combined, and given the title of Equipment Inspector. To take care of this job, the best mechanics available should be selected and compensated accordingly, and every possible effort made to add dignity to the work. If each tour now has an oiler, each would be preferably replaced by men of this selection, but in every case the man in charge of this work during the day tour would be the most capable obtainable. These men would not only provide for proper lubrication, but as they did so, they would be on a constant lookout, and capable of unearthing mechanical troubles which might be expected from reasons other than lack of lubrication. These men would circulate about the mill, and soon set up a routine that would provide that every piece of equipment be inspected and cared for as often as the circumstances might require.

They would be provided with reporting blanks on which they could make written reports of the important happenings during their time of duty. In making their reports, they would use the symbols and numbers which had been assigned to the machines or individual parts. These reports, together with close cooperation on the part of the maintenance department, would aid materially in the planning and scheduling of repair work.

These men would be selected for their mechanical ability, loyalty, ambition, mental and physical alertness; in every case they should have good senses of sight, hearing, smell and touch. Bearings that are noisy and rough, the smell of hot oil, whining gears, loose parts, misaligned rolls, shafts, bearings, and all similar things which are the beginning of most failures will not escape the attention of competent mechanics who also have these other characteristics. Good mechanics cannot endure such things, and will not rest in peace until correction has been made.

Probably your first impression will be that to institute a plan of inspection of equipment along the lines of this one suggested, would be too expensive to operate. Men having these capabilities cannot be had at the same rate that most mills are now paying to the men who supervise the lubrication of their equipment; but it is contended that this difference will be infinitesimal in comparison with the savings that would be realized in maintenance expense alone, to say nothing of the savings from increased production by greatly reducing the time lost for making repairs and adjustments. Men with these capabilities would make many small adjustments while the machines are running, which now do not receive attention until damage has taken place. It is further believed that a well systematized preventive inspection plan will pay big returns even in the smallest of mills, but probably could be laid out on a much less elaborate scale than that required for the larger mills. In the smaller mill, it is possible that these responsibilities might be added to those of the master mechanic.

The equipment inspectors should be supplied with all the data obtainable on the operation and care, as well as the construction of the machinery under their supervision. Until they are perfectly familiar with the construction, they should, in every case, assist in making all major repairs and adjustments.

Roll Grinding

● A special word on roll grinding would not be amiss here. Several mills are giving their rolls the benefit of scheduled grinding with excellent results. A gravel road, scraped regularly will not take on that washboard surface. A roll ground regularly will provide a good surface for the sheet of paper, giving it a higher finish; will give more even drying, longer felt life, longer wire life and better operating conditions. Barring accident, roll surfaces go bad on schedule. Thus a grinding program can be worked out to insure good conditions by grinding them in time. Furthermore, the grinder will operate much more steadily and satisfactorily.

Maintenance is a subject close to our hearts and one that should receive an increasing amount of serious thought. We must take good care of our machinery today as it is going to be hard to replace for a long time to come.

Germany Owes Sweden 50 Million Kroner

● The September 30th issue of The Swedish Wood Pulp Journal carried the following story about the clearing agreement (barter deal) with Germany:

"The result of the negotiations held in Stockholm on 1—22 September between the Swedish and German Government commissions has been published in a communique, which includes a fairly full account of the clearing situation. The main points of this communique may be very briefly summarized by saying that Germany's clearing debt to Sweden at present amounts to about 50 mill. kr. and is expected to grow larger until the turn of the year. To ease this situation, the Reserve Supplies Board will advance 100 mill. kr. against the German deliveries of coal, coke, commercial iron, and chemical products in the first six months of 1942. Events in the last few years have shown that the German exports to Sweden are relatively large in the first half of the year.

"In respect to the new pulp quotas, the negotiations of the government commissions have so far obviously not led to any positive results. The negotiations are continuing, however, and a decision is expected in the immediate future. When the sum to be made available by Germany for the purchase of Swedish pulp has been settled, discussions between the representatives of the industries regarding prices and conditions of delivery are expected to commence without delay. In view of the advanced season it is obviously of the utmost importance to conclude these negotiations at the earliest possible moment, so that deliveries may be completed before the end of the shipping season.

"The above applies to pulp for paper making. An agreement regarding supplementary deliveries of rayon pulp this year under the contract made in the spring is said to have recently been reached between the Swedish producers and the agents of the German purchasing organizations. No details of this agreement can be given yet.

"There is no news regarding the prospects of exports to Holland and Belgium.

"The prospects of private compensation transactions with France, using cellulose as an object of barter on the part of Sweden, are still regarded optimistically, and the negotiations are said to refer to fairly considerable quantities."

The same journal has the following to say concerning the Swedish market for paper:

"In our earlier market reports we have already said that the reduction of our possibilities of exporting paper and cardboard has made the paper industry await with the utmost interest the results of the Swedish-German negotiations that have been proceeding since September 1st, primarily in respect of any supplementary sales to the global agreement of March this year.

"It will be remembered that the 1940 global agreement included 85,000 tons of mainly wrapping paper, while the global agreement of March, 1941, fixed this year's shipments at only 60,000 tons of paper, also chiefly made up of wrappings. It should be noted, however, that by far the greater part of last year's quota was not shipped until this year, and will therefore be debited this year's clearing account, thus largely contributing to the German debit balance on the clearing which has arisen in the last few months. As Germany has no credit balance on her clearing account with Sweden, any supplementary purchases must be postponed until the question of payment has been settled. A decisive improvement in the situation by increased German deliveries—primarily of coal, coke, and iron—can hardly be expected under the present circumstances. The best thing is therefore not to entertain any expectation in regard to the size or prospects of additional supplementary purchases for delivery this year.

"The possibilities of shipments opened to the Swedish export industries by the grant of safe-conducts for some Swedish ships for voyages to South America have been most valuable as things are just now, and fortunately the paper industry has been able to contract for some good parcels to be shipped by these vessels.

"Otherwise, sales have been made to markets like Denmark, Holland, Belgium, France, Switzerland, Italy, and Hungary only sporadically. The quantities disposed of to these markets have been too small, however, to provide much more employment at the mills.

"The situation in the paper market thus still remains far from promising, and even though the demand for most qualities is happily increasing in the home market this can obviously not to any great extent compensate for the almost complete loss of exports to the western and overseas countries due to the blockade.

Canadian Pulp Production Rises In August

● Production of wood pulp in Canada continued to gain during August, reaching a total of 483,880 short tons, air dry weight, of all grades except soda pulp, according to mills reporting to the Canadian Pulp and Paper Association which include all but a small percentage of the productive capacity of the Dominion.

The August production was the largest by a sizeable margin in any previous month this year, comparing with 467,607 tons in July, 432,671 tons in June, 448,524 tons in May, 424,559 tons in April, 418,807 tons in March, 365,823 tons in February and 391,530 tons in January.

The output in August comprised 52,016 tons of bleached sulphite, against 49,483 tons in the preceding month, 100 per cent of the industry's capacity reporting; 14,519 tons of strong sulphite, against 15,260 tons, 100 per cent of the Canadian mills reporting; 85,282 tons of news grade sulphite, against 80,099 tons, 100 per cent of the mills reporting; 35,906 tons of sulphate or kraft pulp, against 35,389 tons, or 95 per cent of the industry reporting, and 296,157 tons of ground wood, against 287,376 tons, 97 per cent of the mills in Canada reporting.

The report shows that 350,650 tons of the August production was used by producing mills, contrasted with 340,390 tons in July, divided for August, 5,786 tons of bleached sulphite, 1,897 tons of strong sulphite, 53,409 tons of news grade sulphite, 19,102 tons of sulphate, and 270,456 tons of ground wood. Shipments from producing mills, including those within Canada and for export to the United States and other countries, totaled 153,012 tons, against 141,793 tons in July. Exports in August were 141,014 tons, consisting of 44,328 tons of bleached sulphite, 11,462 tons of strong sulphite, 43,105 tons of news grade sulphite, 14,427 tons of sulphate and 27,692 tons of ground wood.

Stocks on hand at Canadian mills at the close of August totaled 40,413 tons, compared with 60,453 tons a month previously, and comprised 9,536 tons of bleached sulphite, 7,263 tons of strong sulphite, 7,612 tons of news grade sulphite, 1,360 tons of sulphate and 14,642 tons of ground wood.

St. Helens Installs Electric Eye Doors

● St. Helens Pulp & Paper Company, St. Helens, Oregon, completed installation of three sets of electric-eye controlled doors, early in November. Each set is approximately 14 by 14 feet and made up of two doors, one swinging to the inside and the other to the outside, to facilitate functioning even though there be differences of air pressure between the inside and outside of the building.

These automatic door units are built to open automatically at the approach of the mechanical stacker and to close after the stacker passes through the opening. This obviates the necessity of leaving the doors open, allowing entry of dust particles and cold air, and also relieves the workmen who occasionally tended the doors for other duties.

One set of the automatic doors is on the second story at the head of the outside ramp and the other two sets are on the first floor.

Powell River Hospital Under Way

Powell River Company has started construction of a four-story hospital building at a cost of about $125,000. The Powell River Employes' Sick Benefit Association has contributed $30,000 towards the project, and the provincial government has granted $5000.

The PACIFIC PAPERBOARD COMPANY at Longview has a stock of waste newspapers and magazines of nearly 2,500 tons to be used with their own groundwood and purchased sulphite pulps in the making of a variety of paperboard products. This volume would cover an acre of ground to a depth of about 8 feet, according to estimates. The building at the far left is the new warehouse and on the right is the new waste paper shed. Both were expected to be completed early in November. The warehouse is 50 by 200 feet and the shed 50 by 208 feet.

At the left of the warehouse and out of the picture is the new machine room, housing the No. 2 board machine which is starting production late this month.

Will It Happen Here?

● The New Yorker's "Letter from London" cabled October 19th by correspondent Mollie Panter-Downes, said in part:

"While everyone's thoughts were on the Battle for Moscow last week, a bloodless but spirited battle was being fought right here by the book trade. Several eminent publishers and printers sharpened their pens and charged into a rumpus over the new government restrictions on paper and binding materials. These shortages, combined with a dearth of skilled labor, are leading to a terrible situation in the publishing business. People are reading as they have never read before (Hatchards, the bookseller in Piccadilly, says that it has had its best season in years), but few new books are coming out now and thousands of old books were destroyed in the air raids. There is an increasing demand for technical works to meet the needs of training machine workers, R.A.F. apprentices, and others, and it appears that the tighter rationing of publishers' materials will mean a future shortage of texts of this kind as well as of the unessential novel.

"When the new restrictions were announced, Mr. J. H. Blackwood, of the old publishing firm of Blackwood & Sons, snorted that although the legitimate book-making trade was being strangled, there was still apparently plenty of paper for the Civil Service to maintain its "overwhelming flood of government forms of all descriptions." Another plaint came from one of the masters at Marlborough College, who drew attention to the severe shortage of schoolbooks. "When the booksellers inform us, as they have done, that they cannot supply a French grammar or even (incredible as it sounds) an Oxford 'Milton,'" he said mournfully, "matters are come to a pretty pass."

Bill Haverman On Vacation

● W. H. Haverman, shift superintendent, Longview Mill, Weyerhaeuser Timber Company, Longview, Washington, went on a two weeks' vacation, starting October 27th.

INDEX OF ADVERTISERS